

# KIC 010336674

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010336674-01	OBS	No	378.381839	508.334001	1919.1	36.673	9.4	11.7	0.71	5426	3.81	0.44
010336674-03	OBS	No	368.061987	165.623924	1498.1	34.269	8.6	11.1	0.71	5426	2.71	0.46
010336674-04	OBS	No	363.460429	164.965697	1531.6	33.983	8.3	9.9	0.71	5426	3.41	0.46
010336674-05	OBS	No	373.853873	302.683613	2204.9	14.951	8.1	7.9	0.71	5426	6.33	0.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010336674-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—CENT_FEW_DIFFS
010336674-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
010336674-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
010336674-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

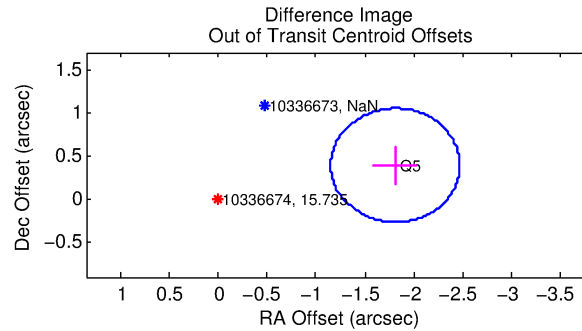
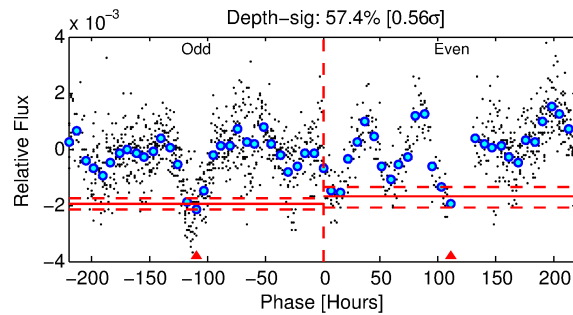
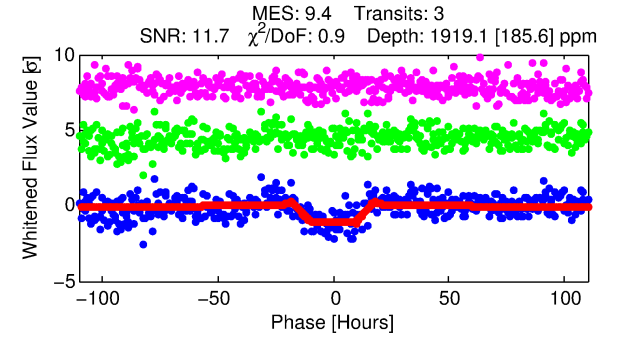
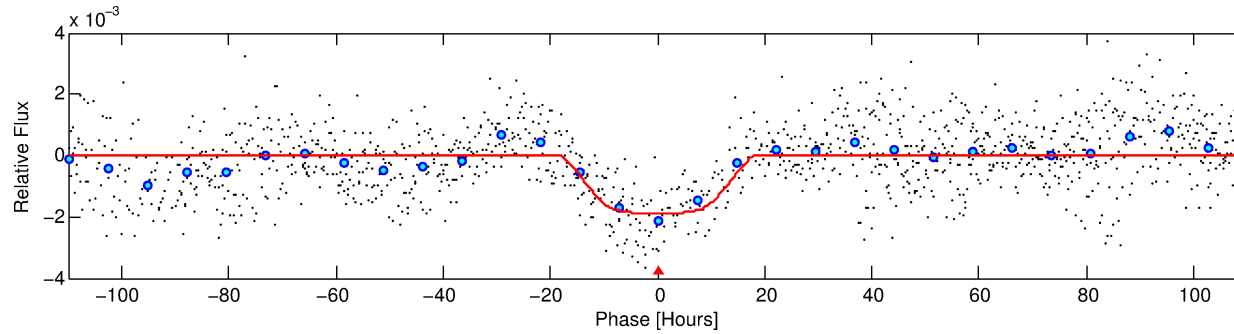
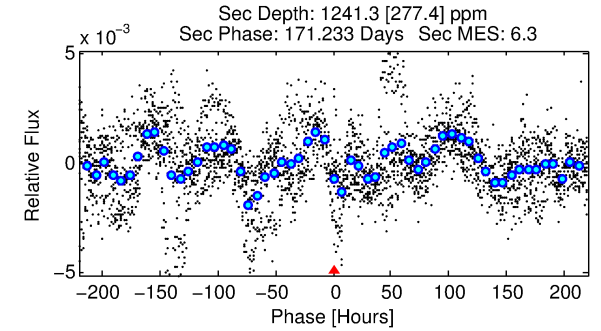
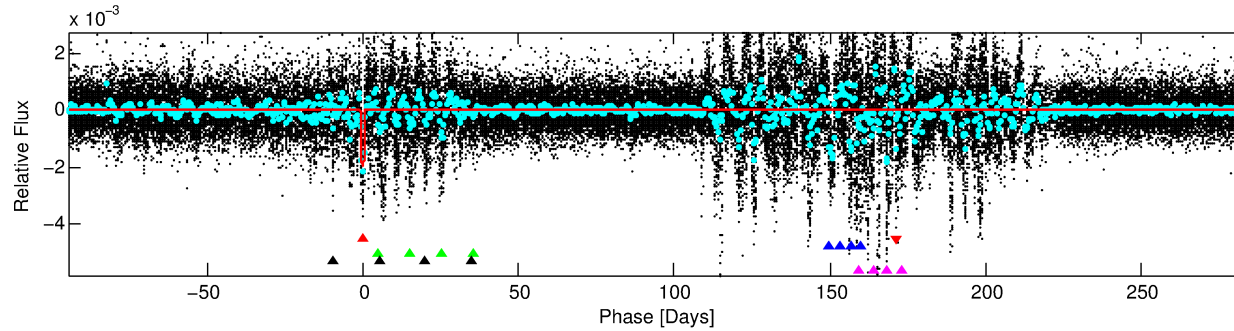
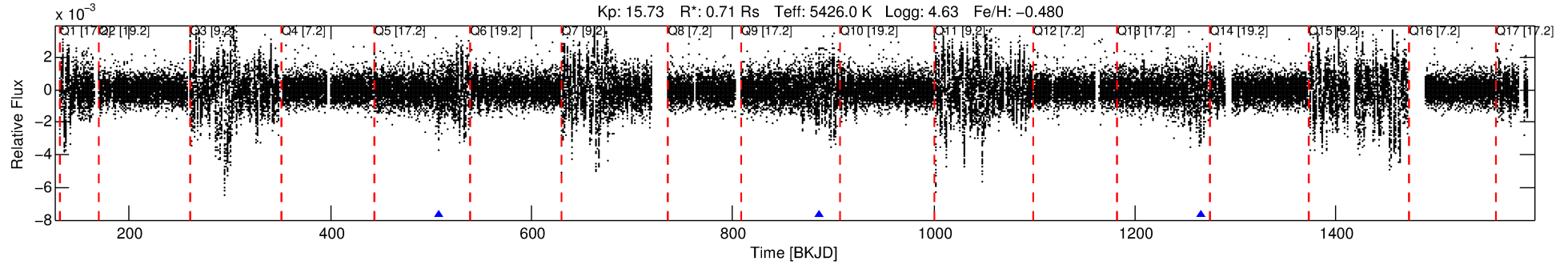
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010336674-01

No Significant Match Found

# DV One-Page Summary

KIC: 10336674 Candidate: 1 of 5 Period: 378.382 d



## DV Fit Results:

Period = 378.38184 [0.03483] d  
Epoch = 508.3340 [0.0410] BKJD  
Rp/R\* = 0.0493 [0.0032]  
a/R\* = 39.32 [5.18]  
b = 0.92 [0.02]  
Seff = 0.44 [0.10]  
Teq = 208 [11] K  
Rp = 3.81 [0.65] Re  
a = 0.9412 [0.1208] AU  
Ag = 41653.81 [13166.89] [3.16σ]  
Teffp = 4586 [326] K [13.40σ]

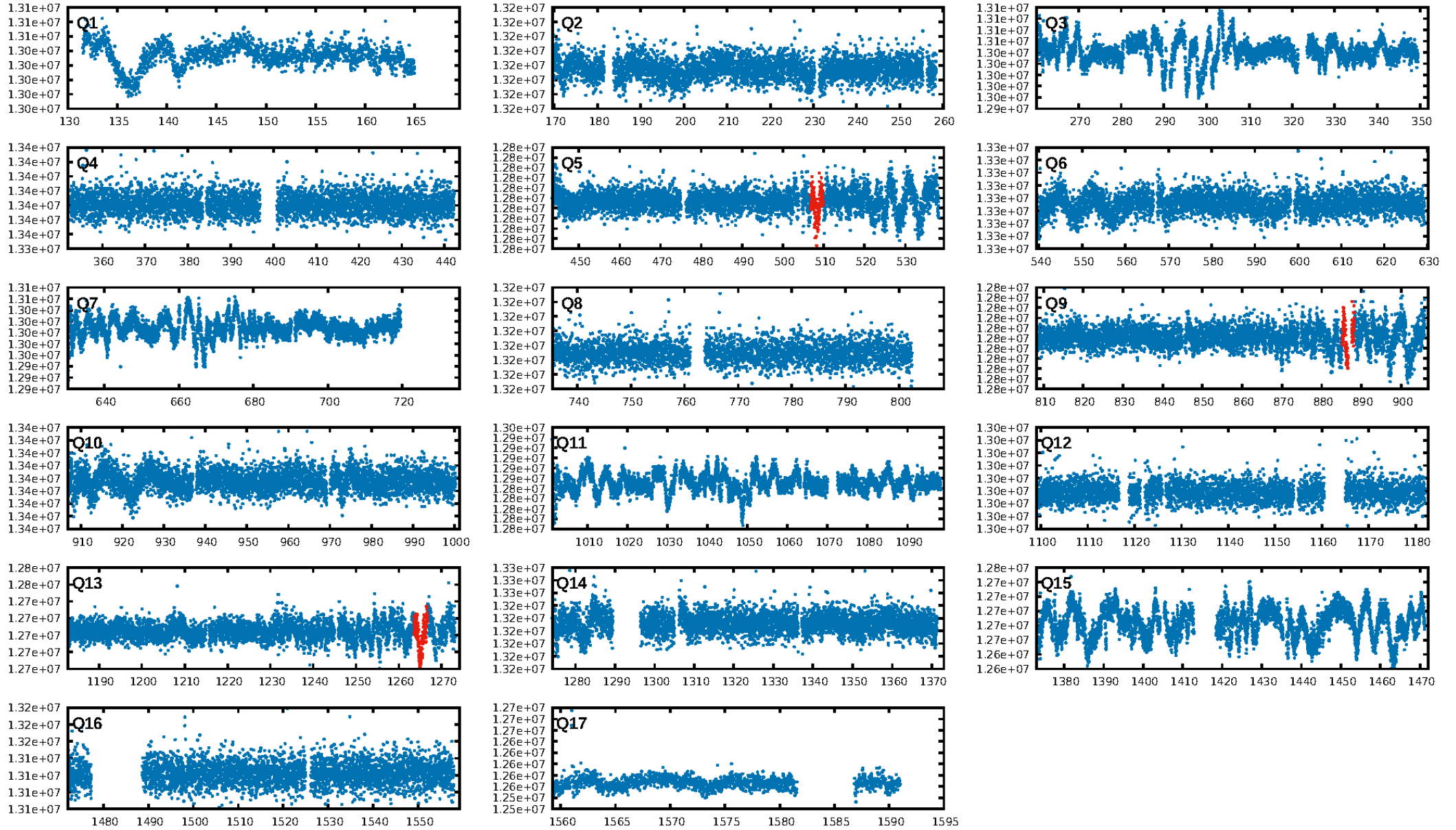
## DV Diagnostic Results:

ShortPeriod-sig: 94.8% [1.94σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 17.2%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.14e-09**  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.896**  
Centroid-sig: 0.0%  
Centroid-so: 4.499 arcsec [2.40σ]  
**OotOffset-rm: 1.852 arcsec [8.42σ]**  
**KicOffset-rm: 1.719 arcsec [7.82σ]**  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [1/1]

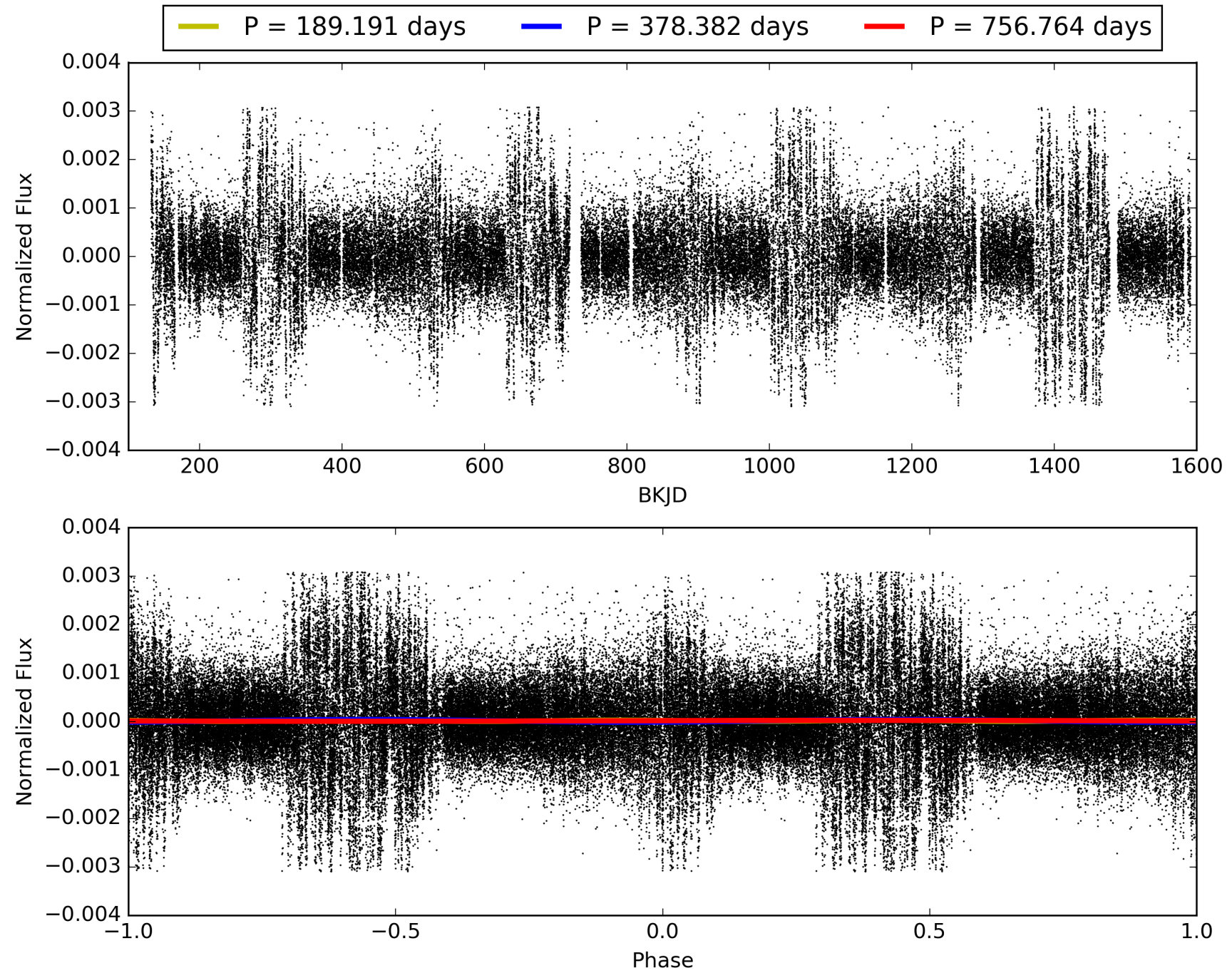
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:57:09 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010336674-01, PDC Light Curves



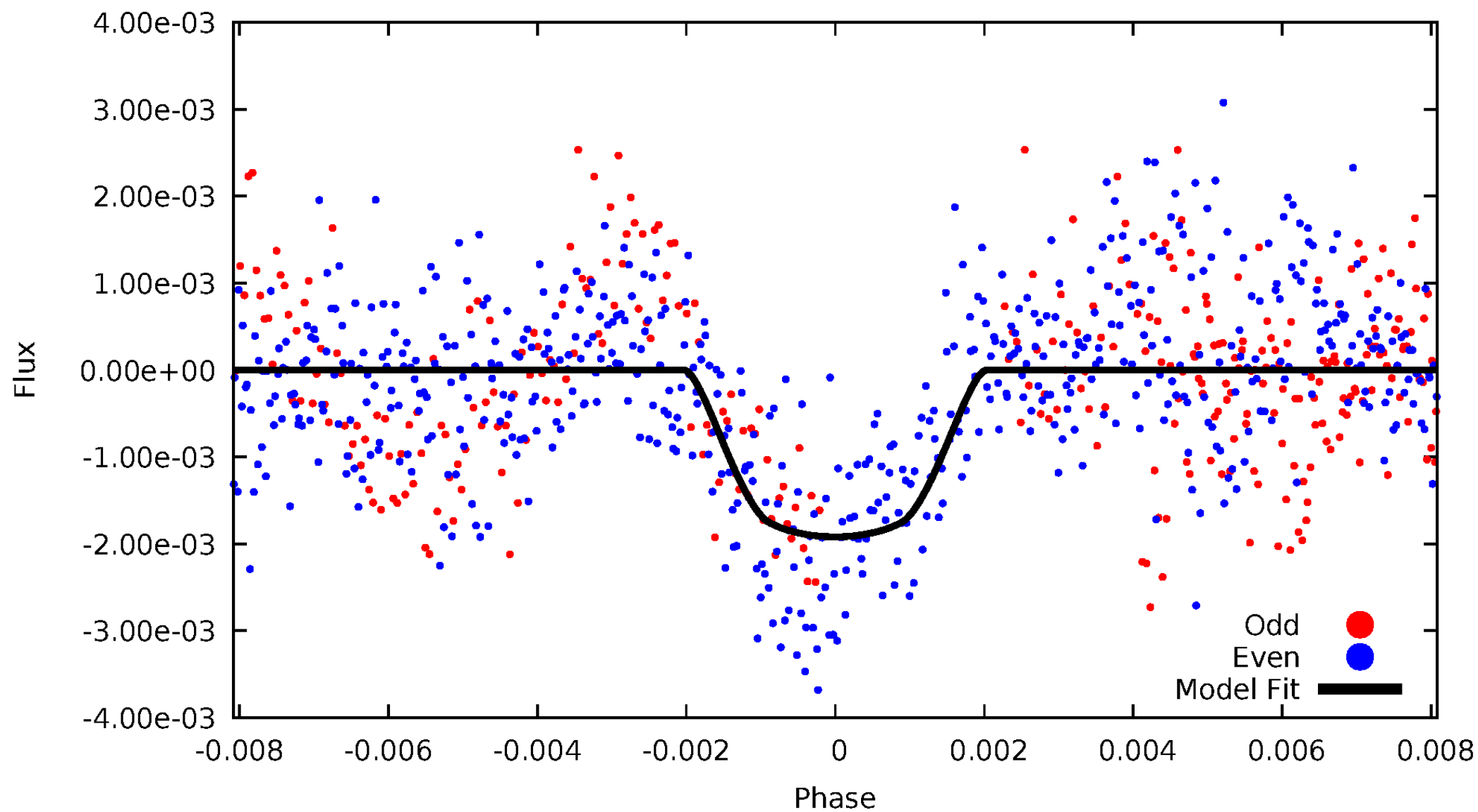
# TCE 010336674-01





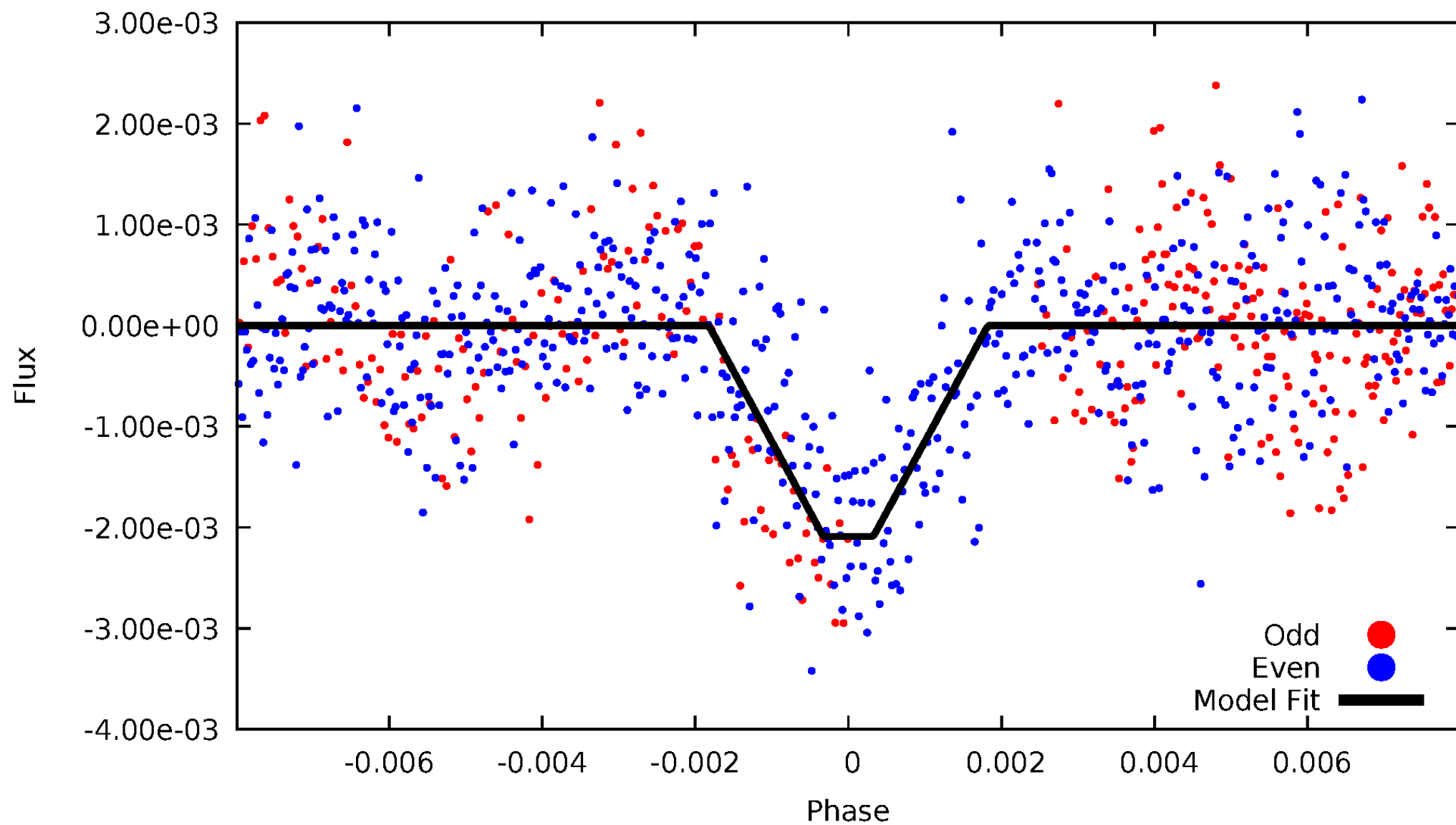
# DV Odd/Even

TCE 010336674-01



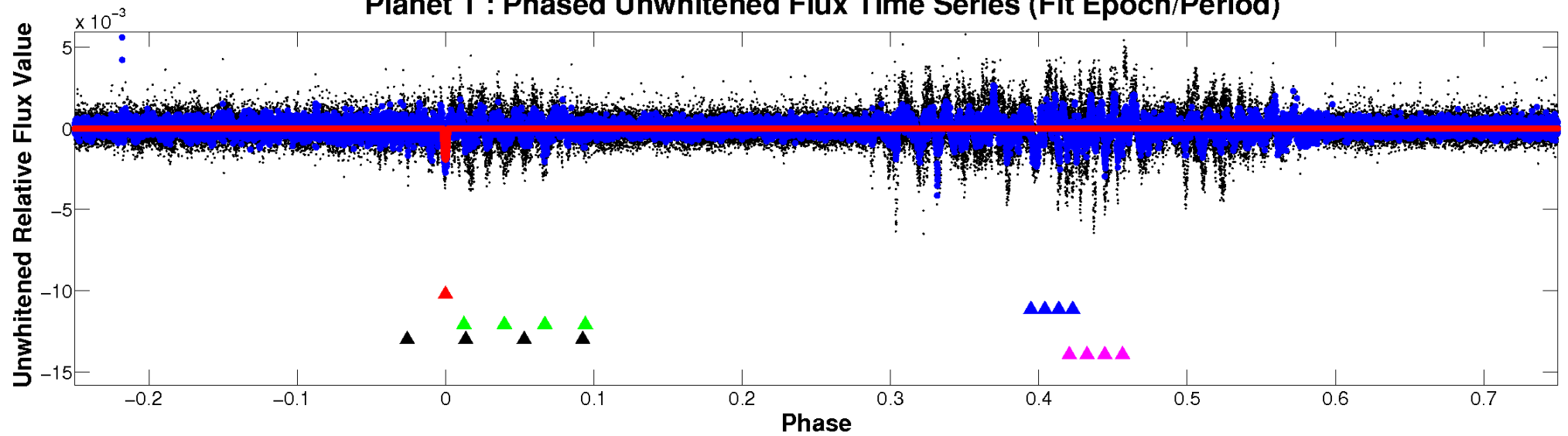
# ALT Odd/Even

TCE 010336674-01

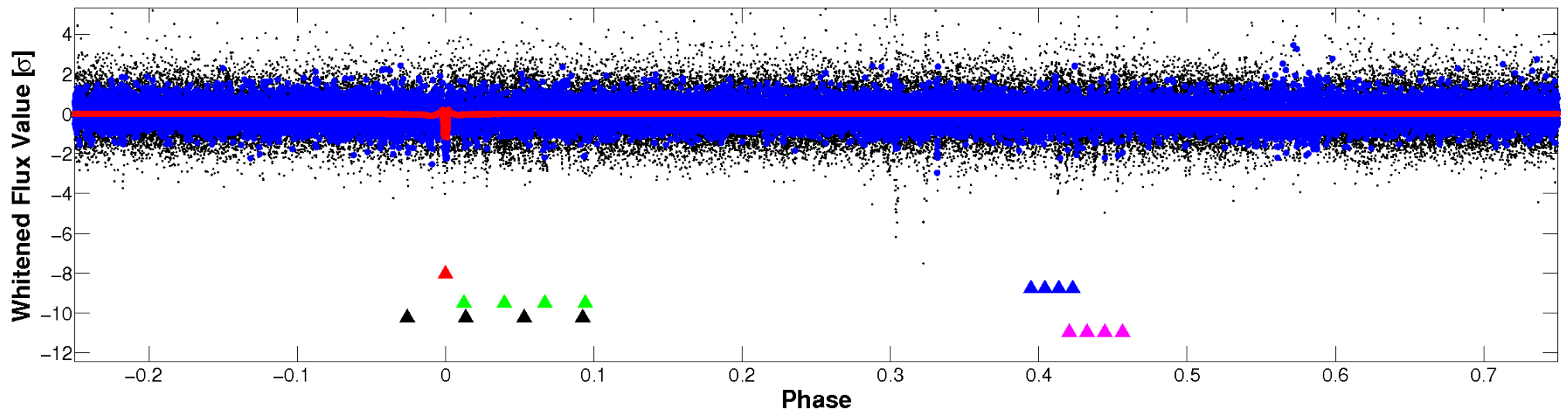


# Non-Whitened Vs. Whitened Light Curve

## Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

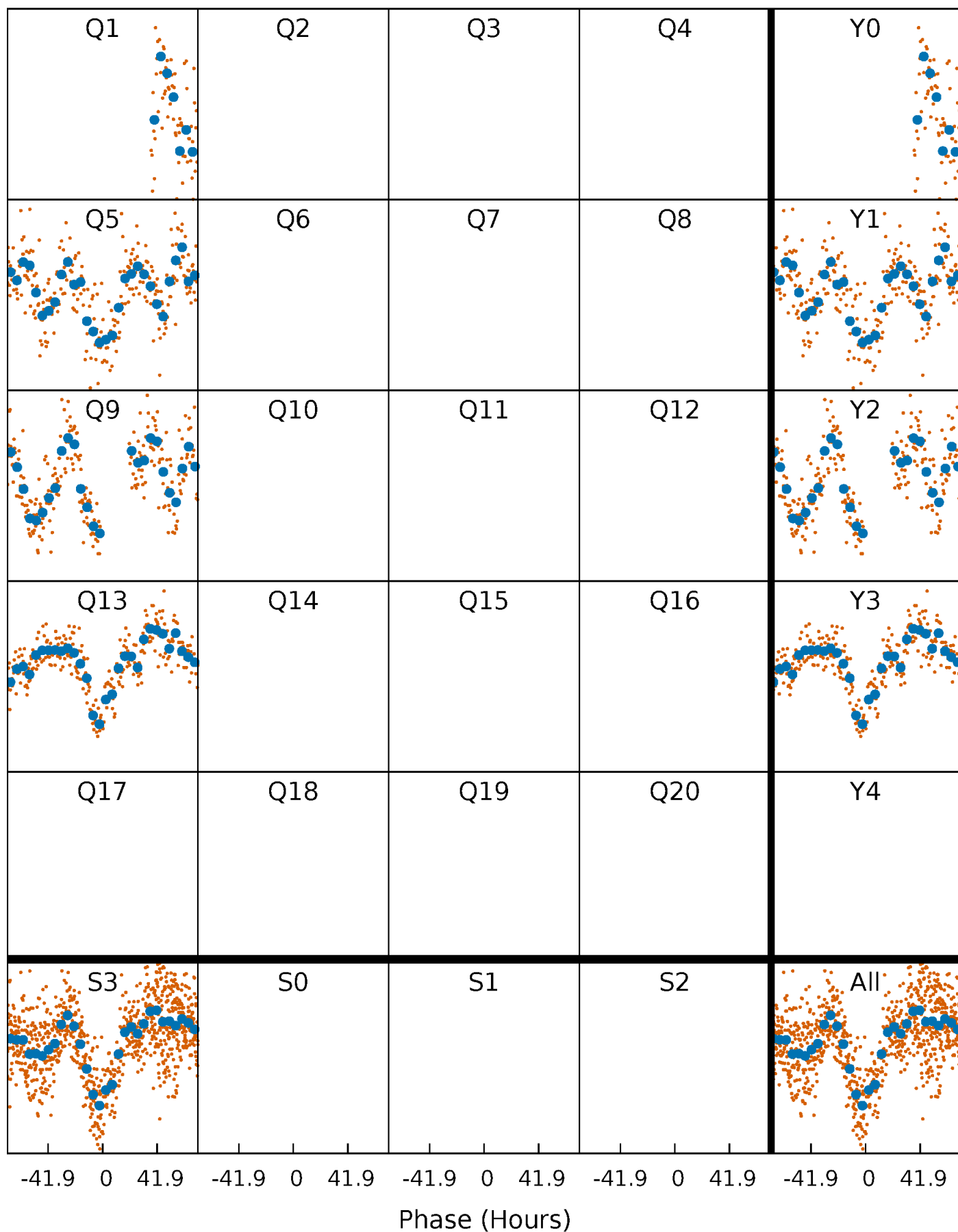


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

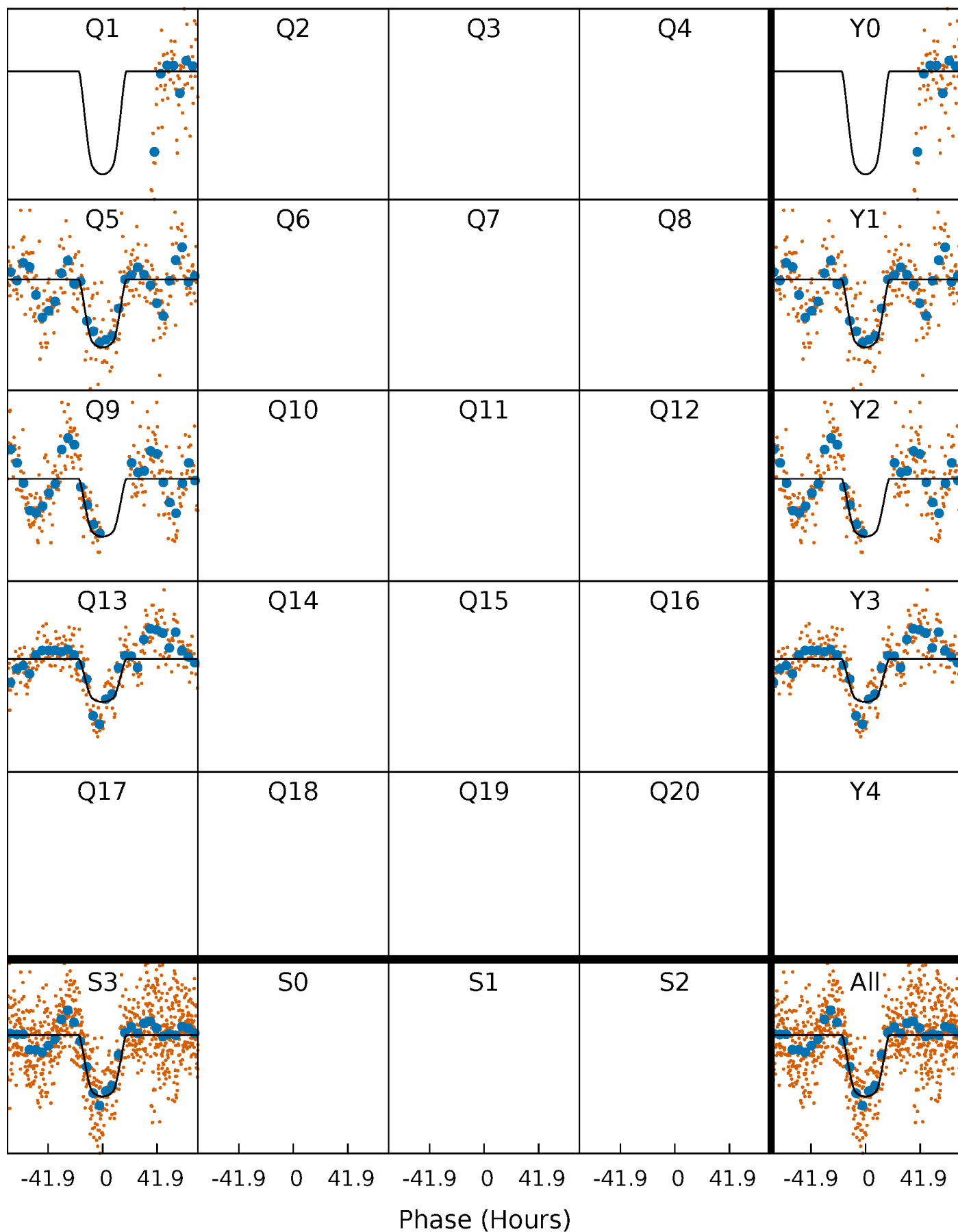
TCE 010336674-01 P=378.381839 Days  $T_0=508.334001$  (BKJD)





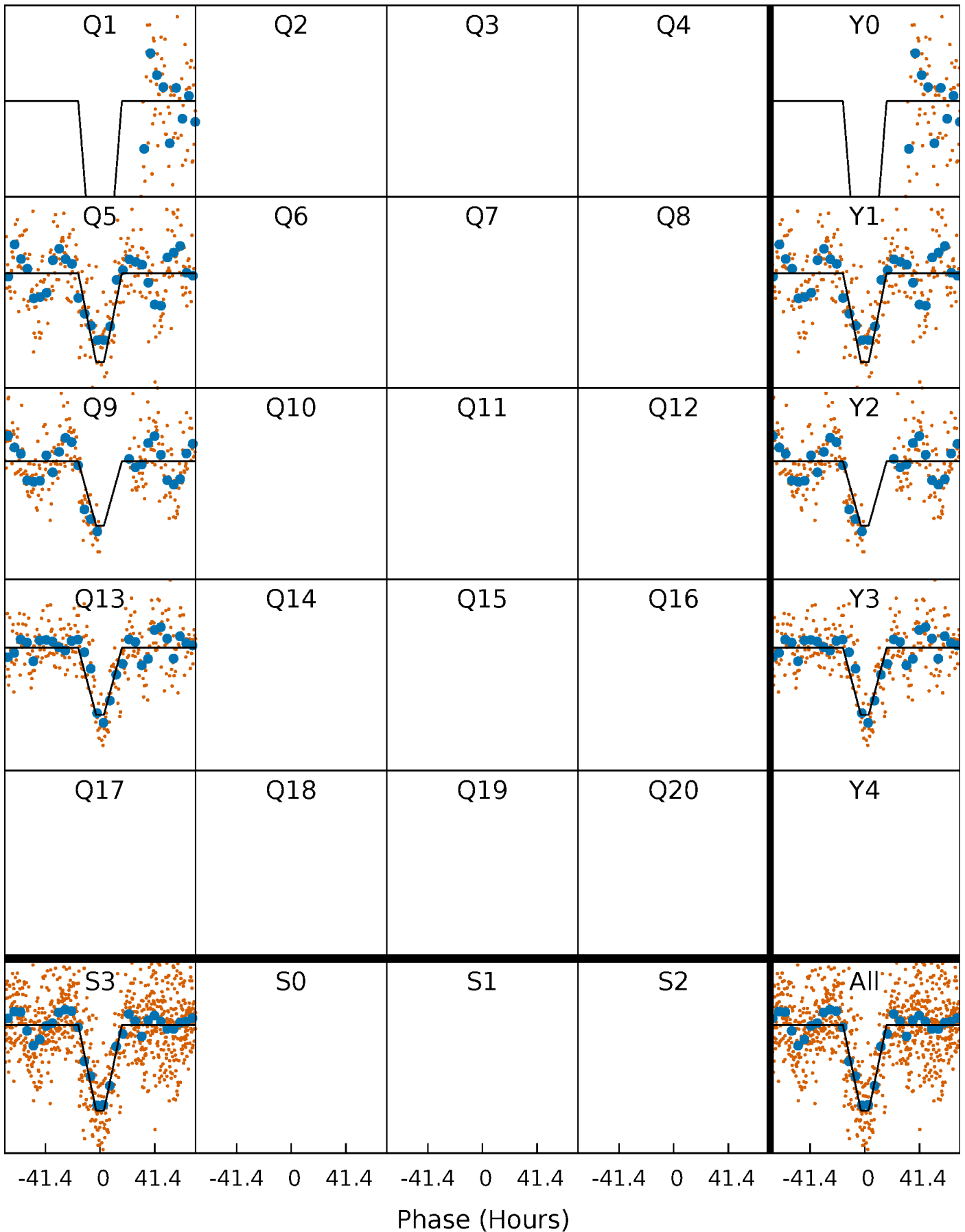
# DV Quarter-Phased Transit Curves

TCE 010336674-01 P=378.381839 Days  $T_0=508.334001$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

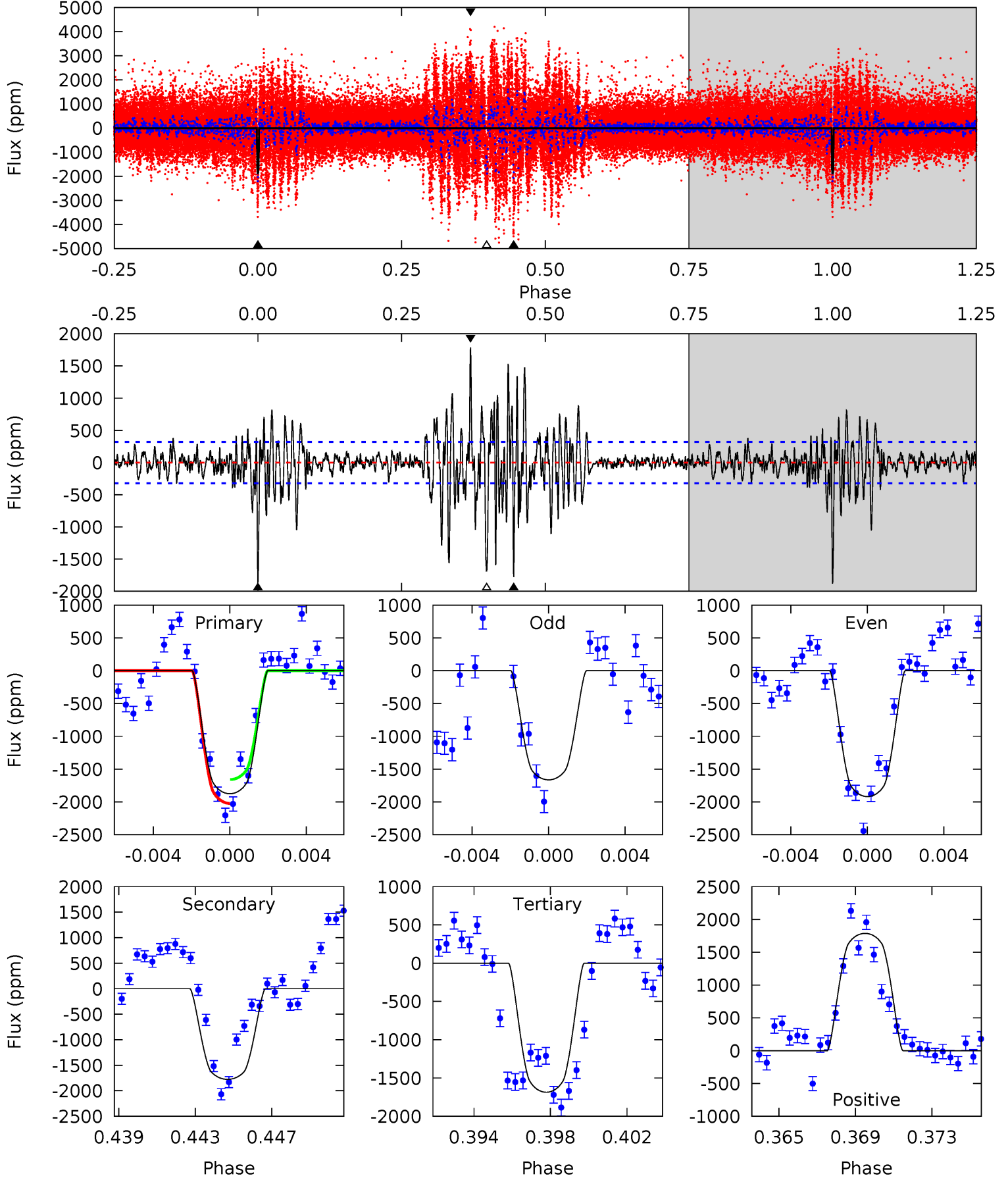
TCE 010336674-01 P=378.211573 Days  $T_0=508.427859$  (BKJD)



# DV Model-Shift Uniqueness Test

010336674-01, P = 378.381839 Days, E = 129.952162 Days

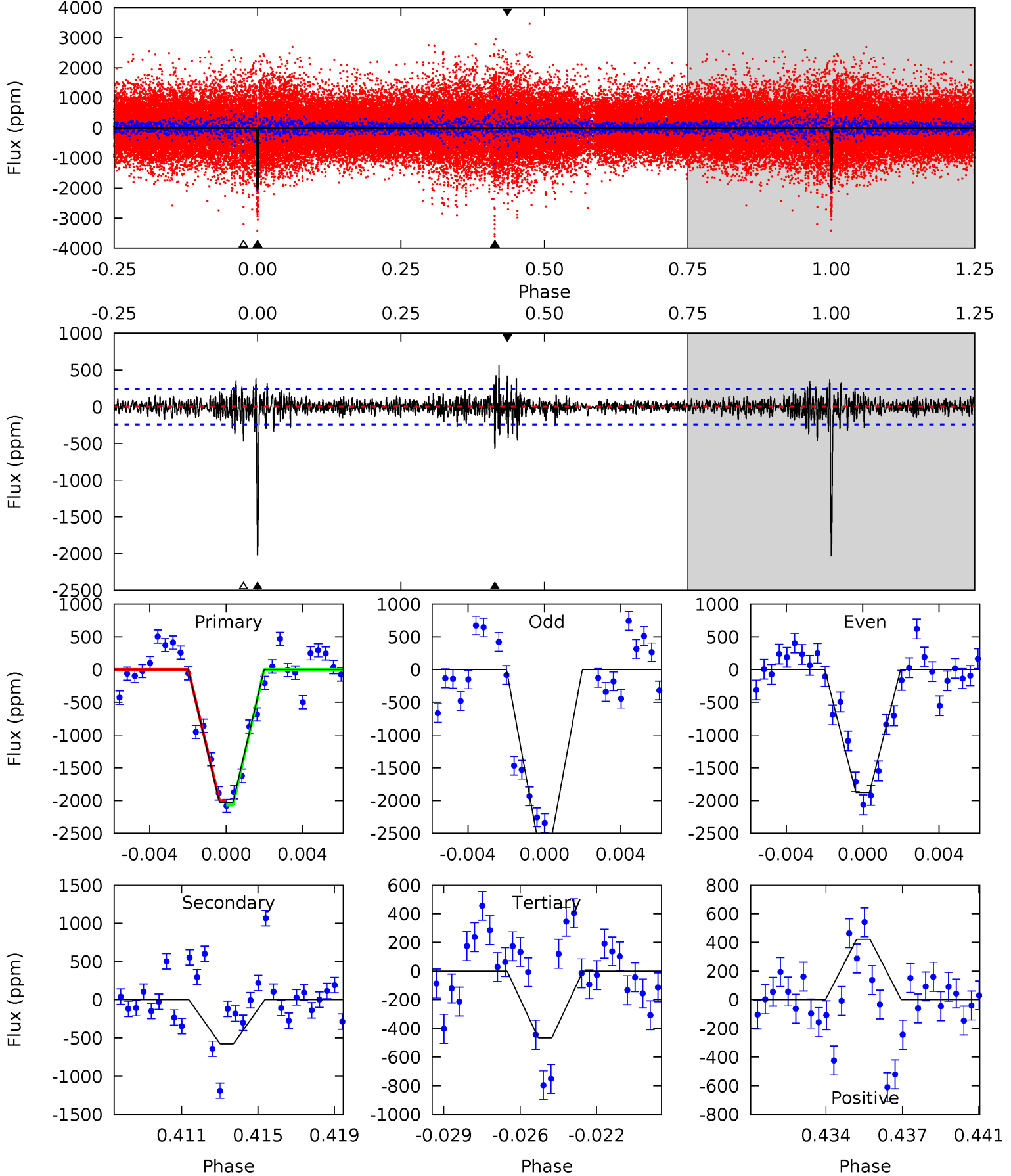
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.3	28.7	27.3	28.9	5.19	2.87	5.45	3.06	1.43	1.47	-0.17	1.47	1.08	0.49	2.82



# Alt Model-Shift Uniqueness Test

010336674-01, P = 378.211573 Days, E = 130.216286 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
43.5	12.4	10.0	9.04	5.22	2.90	1.77	33.5	34.5	2.35	3.34	6.18	1.04	0.22	0.75





### Stellar Parameters For KIC 010336674

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5426^{+162}_{-146}$	$4.628^{+0.032}_{-0.097}$	$-0.480^{+0.300}_{-0.300}$	$0.708^{+0.111}_{-0.051}$	$0.785^{+0.082}_{-0.075}$	$3.117^{+0.518}_{-0.998}$
	+3%/-3%	+1%/-2%	+62%/-62%	+16%/-7%	+10%/-10%	+17%/-32%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 010336674-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1776 \pm 62$	$3.93^{+0.42}_{-0.36}$	$294^{+13}_{-11}$	$5076^{+210}_{-205}$	$56194^{+11282}_{-9357}$
Alt.	$-576 \pm 47$	$3.61^{+0.34}_{-0.31}$	$293^{+12}_{-10}$	$4188^{+161}_{-162}$	$21468^{+4305}_{-3667}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

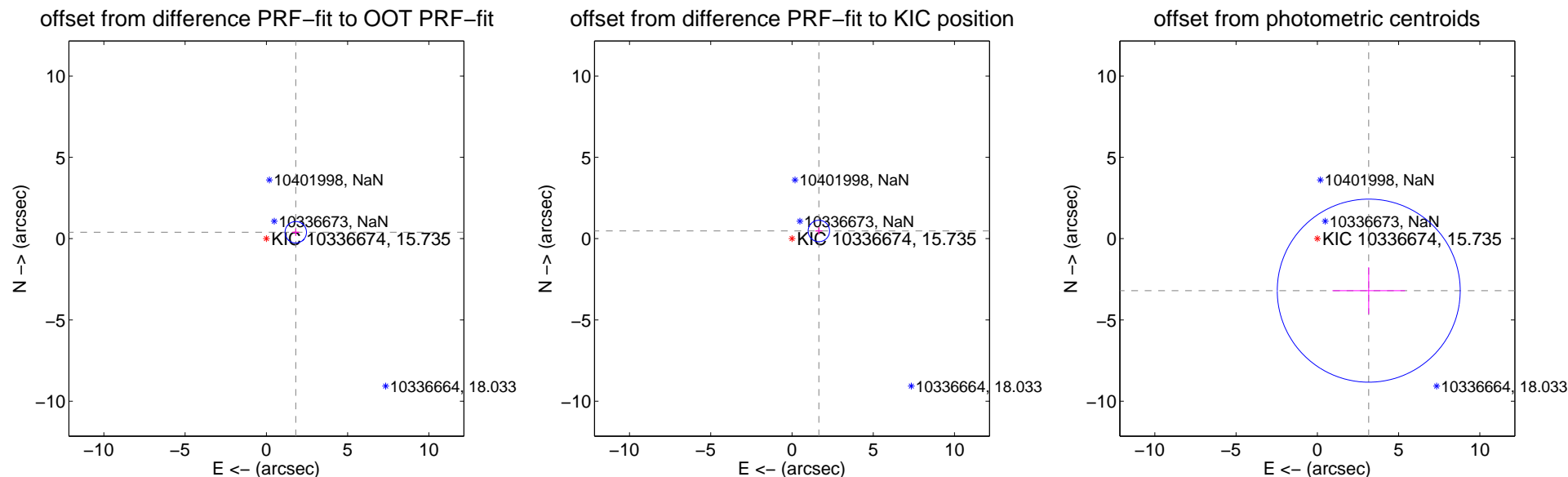
## DV Centroid Data

Supplemental centroid analysis for 010336674-01. Kepler magnitude: 15.73. Transit SNR 11.66

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.852 \pm 0.220$	8.42	$-1.809 \pm 0.220$	$0.393 \pm 0.223$
PRF-fit source offset from KIC position	$1.719 \pm 0.220$	7.82	$-1.653 \pm 0.220$	$0.472 \pm 0.223$
photometric centroid source offset	$4.50 \pm 1.88$	2.40	$-3.16 \pm 2.24$	$-3.20 \pm 1.44$

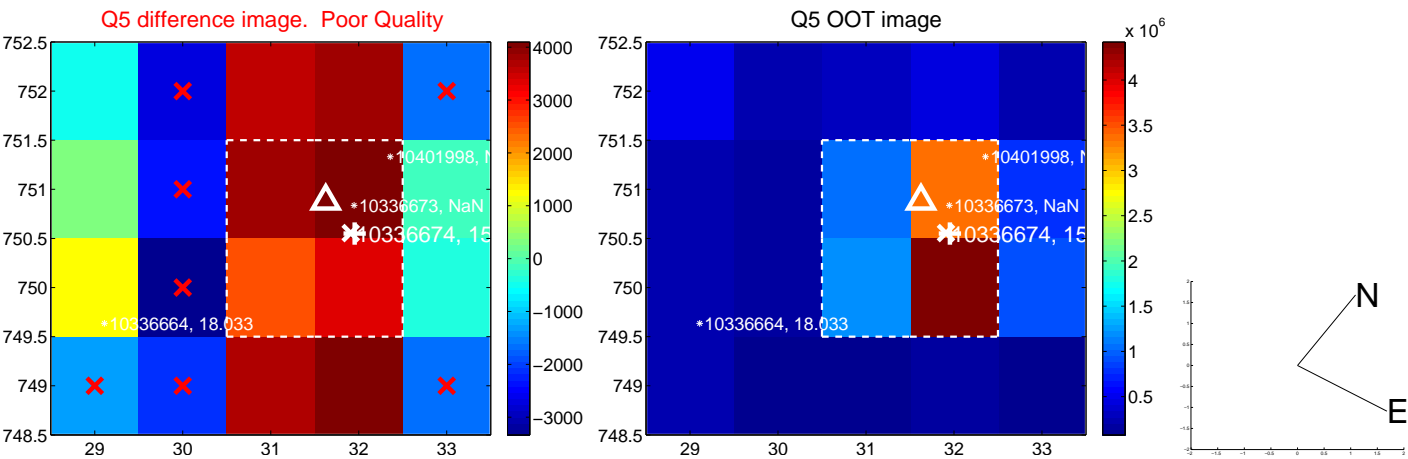


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





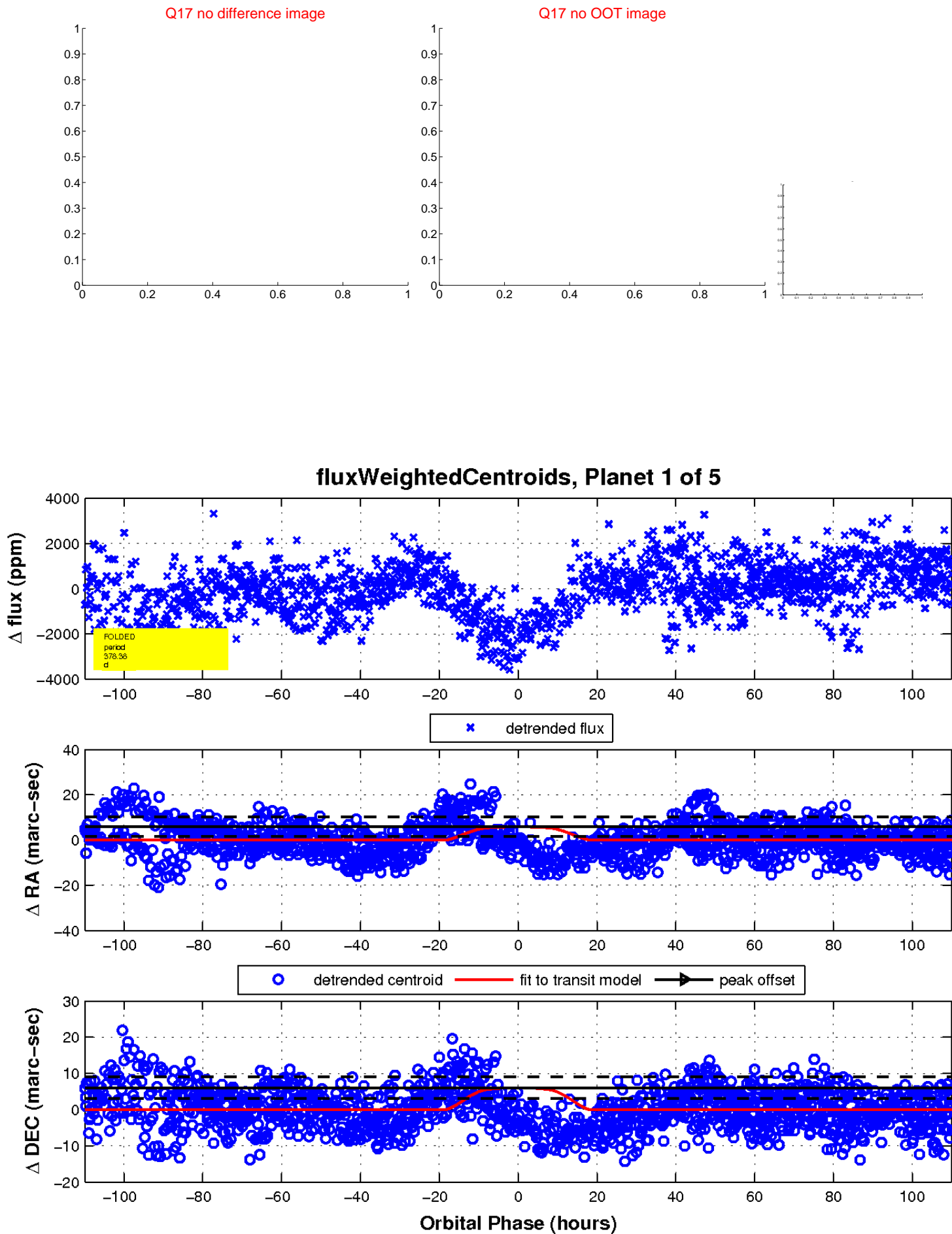
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

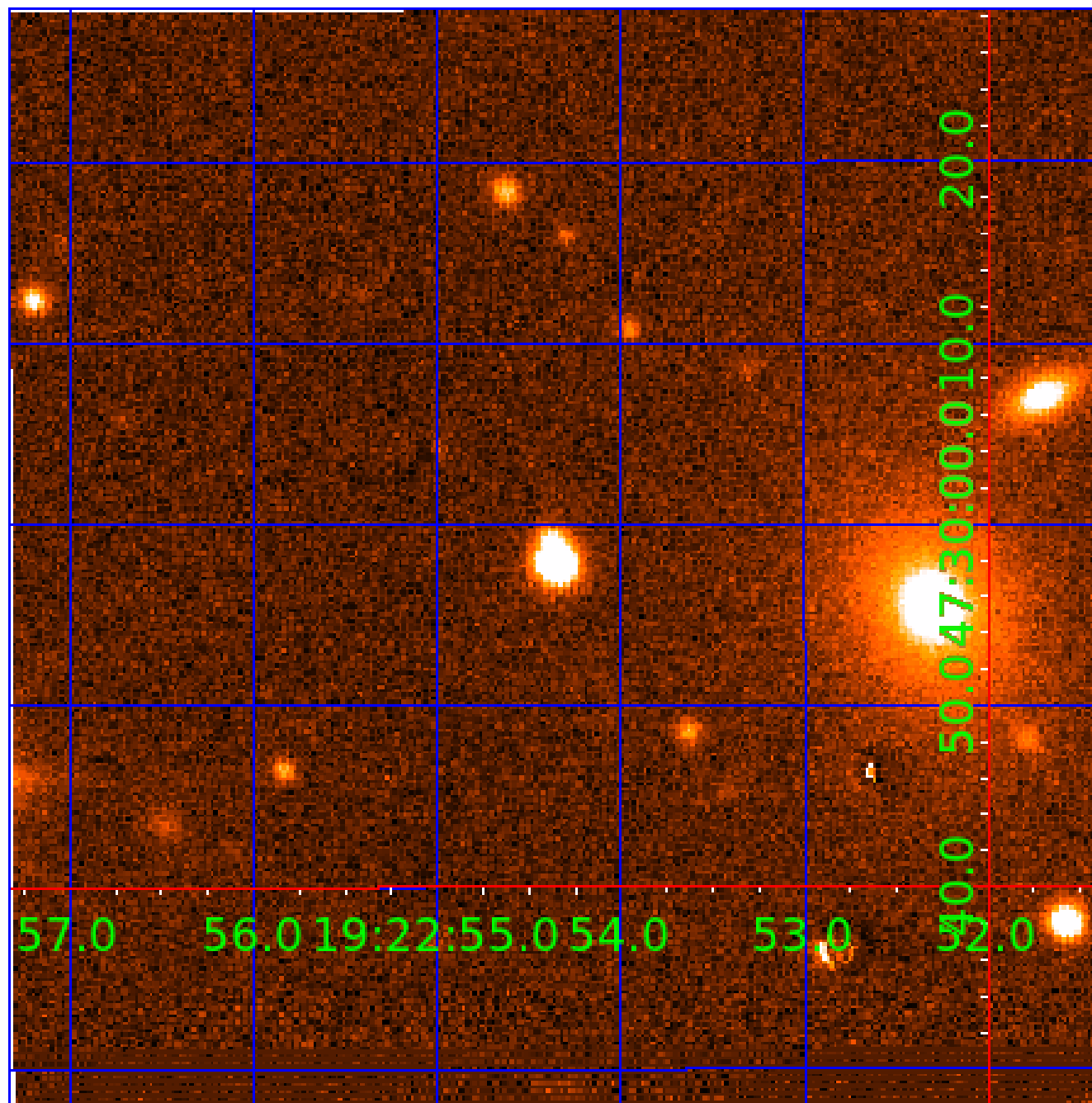


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 010336674

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010336674-01	OBS	No	378.381839	508.334001	1919.1	36.673	9.4	11.7	0.71	5426	3.81	0.44
010336674-03	OBS	No	368.061987	165.623924	1498.1	34.269	8.6	11.1	0.71	5426	2.71	0.46
010336674-04	OBS	No	363.460429	164.965697	1531.6	33.983	8.3	9.9	0.71	5426	3.41	0.46
010336674-05	OBS	No	373.853873	302.683613	2204.9	14.951	8.1	7.9	0.71	5426	6.33	0.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010336674-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—CENT_FEW_DIFFS
010336674-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
010336674-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
010336674-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

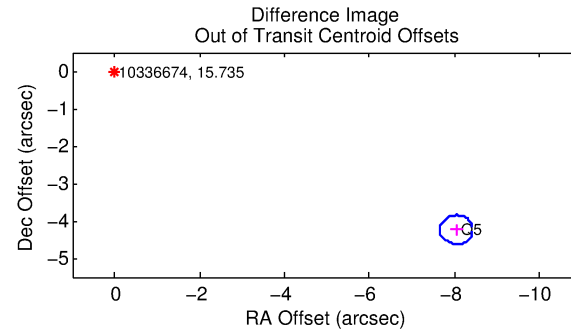
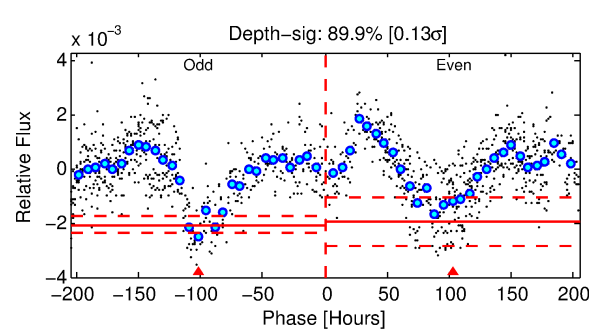
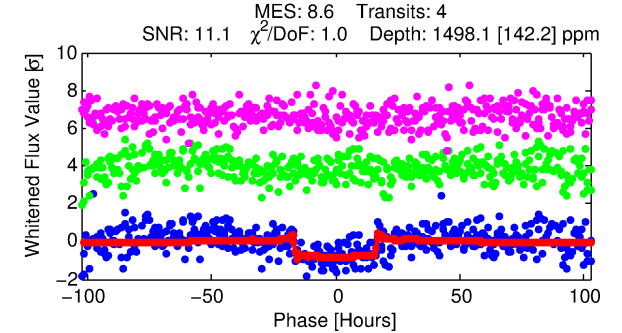
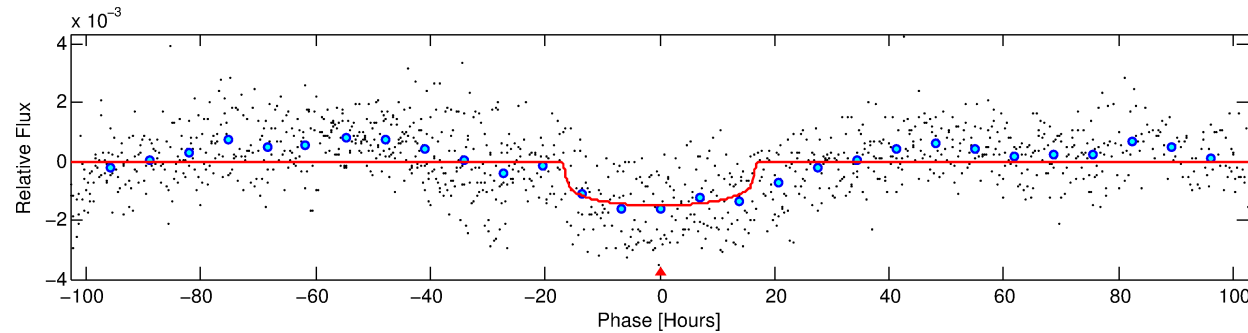
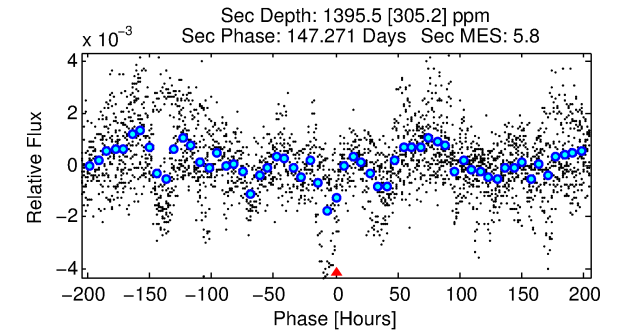
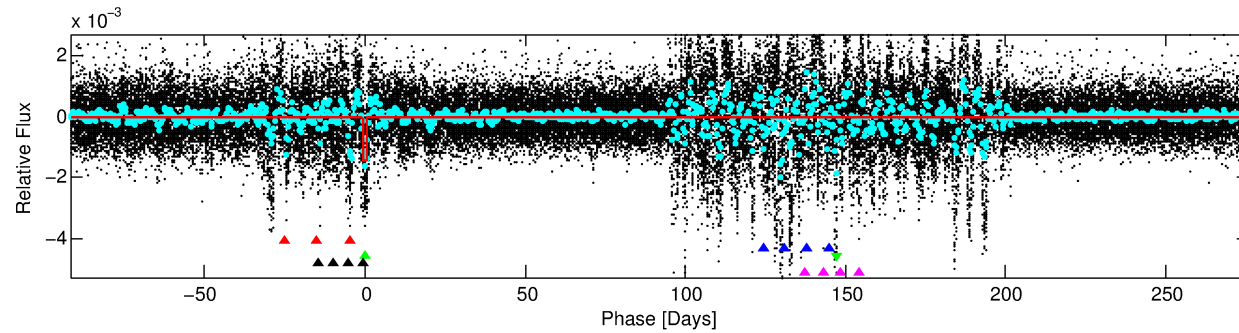
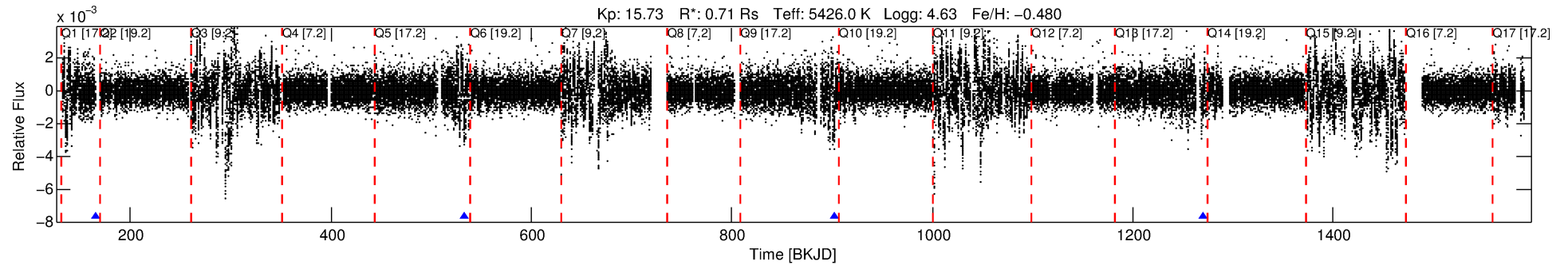
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010336674-03

No Significant Match Found

# DV One-Page Summary

KIC: 10336674 Candidate: 3 of 5 Period: 368.062 d



## DV Fit Results:

Period = 368.06199 [0.01557] d  
Epoch = 165.6239 [0.0258] BKJD  
Rp/R\* = 0.0350 [0.0064]  
a/R\* = 84.54 [63.01]  
b = 0.10 [7.54]  
Seff = 0.46 [0.10]  
Teq = 210 [11] K  
Rp = 2.71 [0.65] Re  
a = 0.9240 [0.1186] AU  
Ag = 89525.66 [41563.57] [2.15σ]  
Teff = 5604 [621] K [8.68σ]

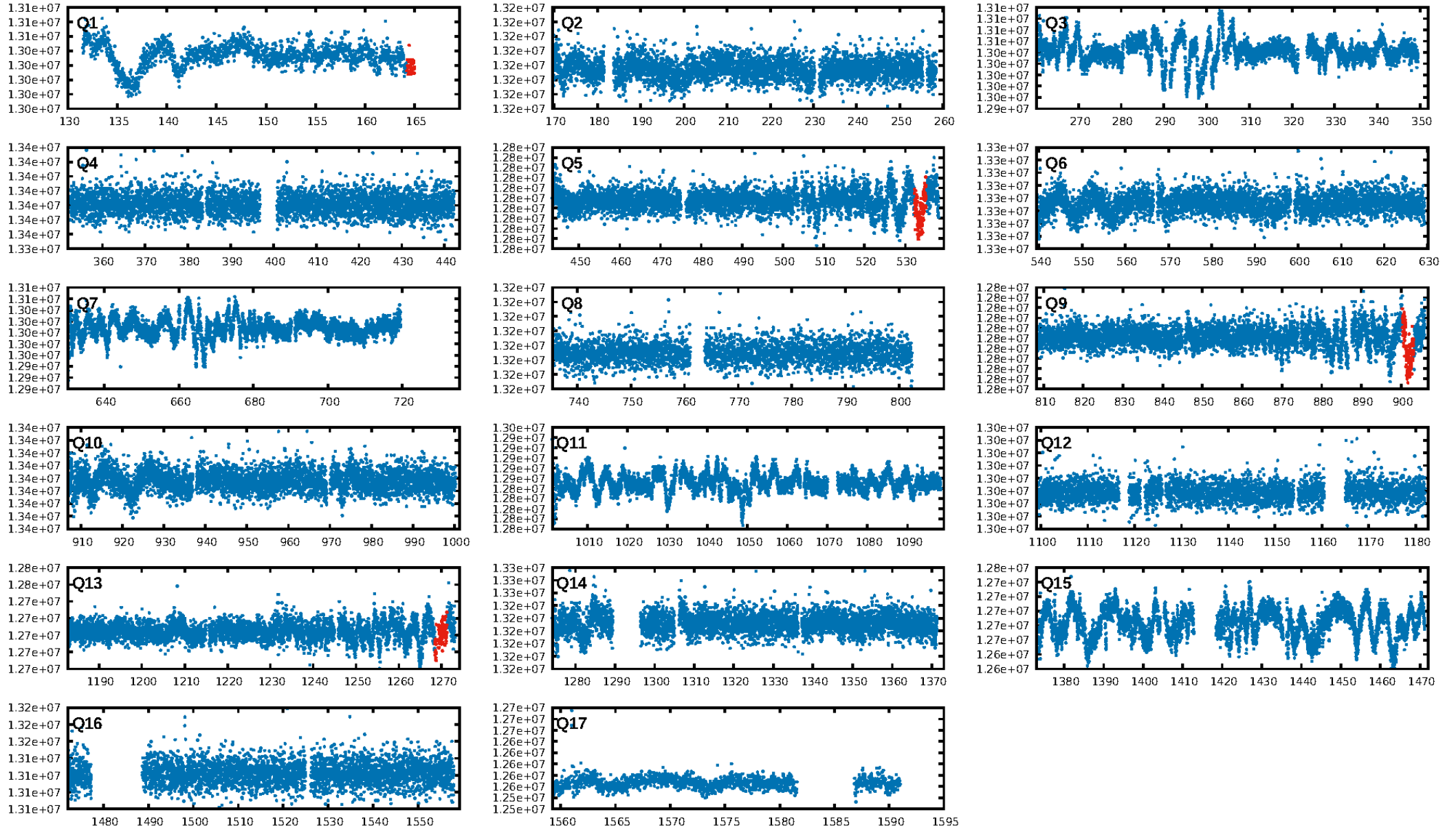
## DV Diagnostic Results:

ShortPeriod-sig: 97.8% [2.29σ]  
LongPeriod-sig: 100.0% [3.72σ]  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGoF-sig: 100.0%  
Bootstrap-pfa: 5.78e-09  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 13.31  
Centroid-sig: 16.6%  
Centroid-so: 3.584 arcsec [1.66σ]  
OotOffset-rm: 9.103 arcsec [70.24σ]  
KicOffset-rm: 8.988 arcsec [69.37σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
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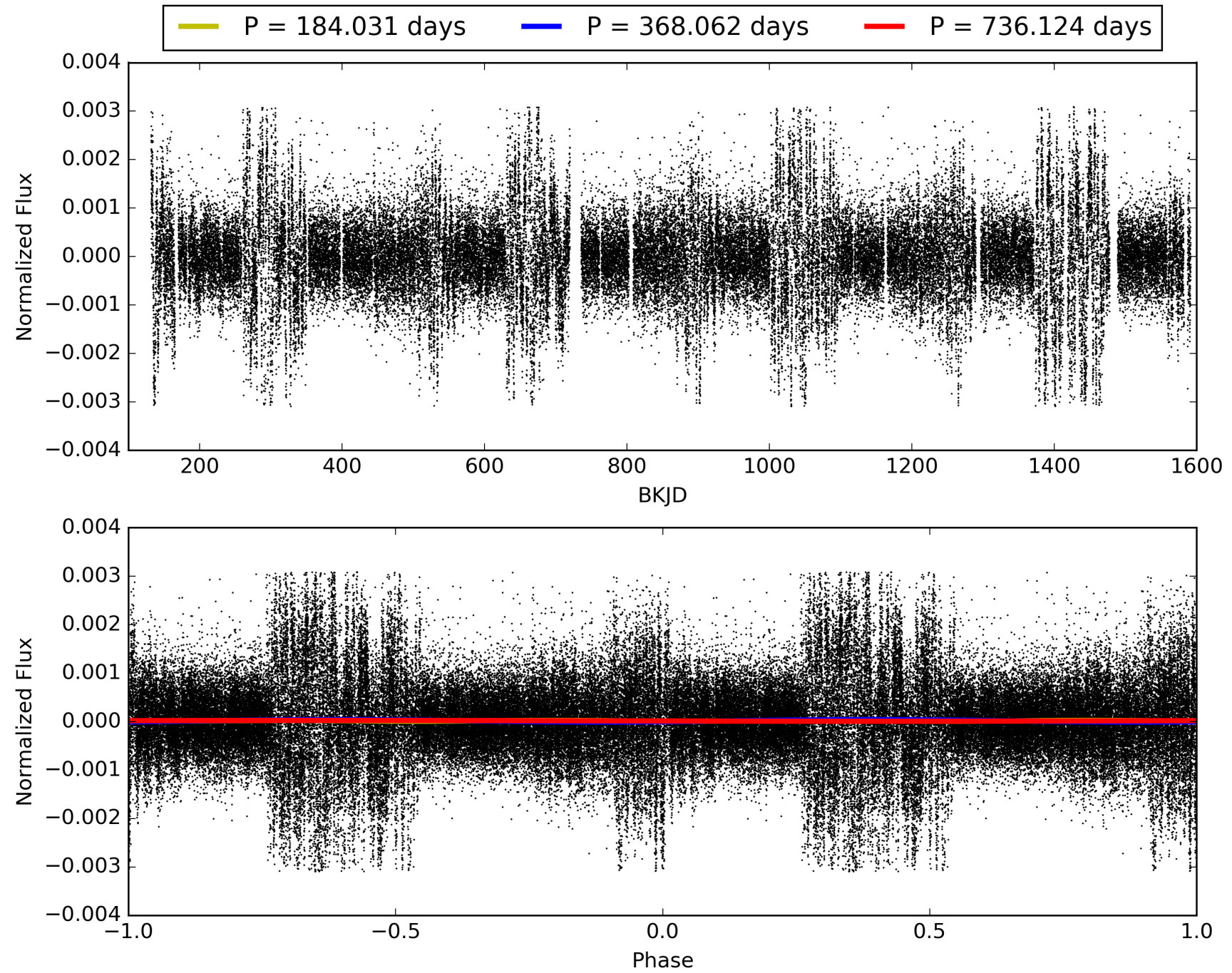
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:57:25 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010336674-03, PDC Light Curves

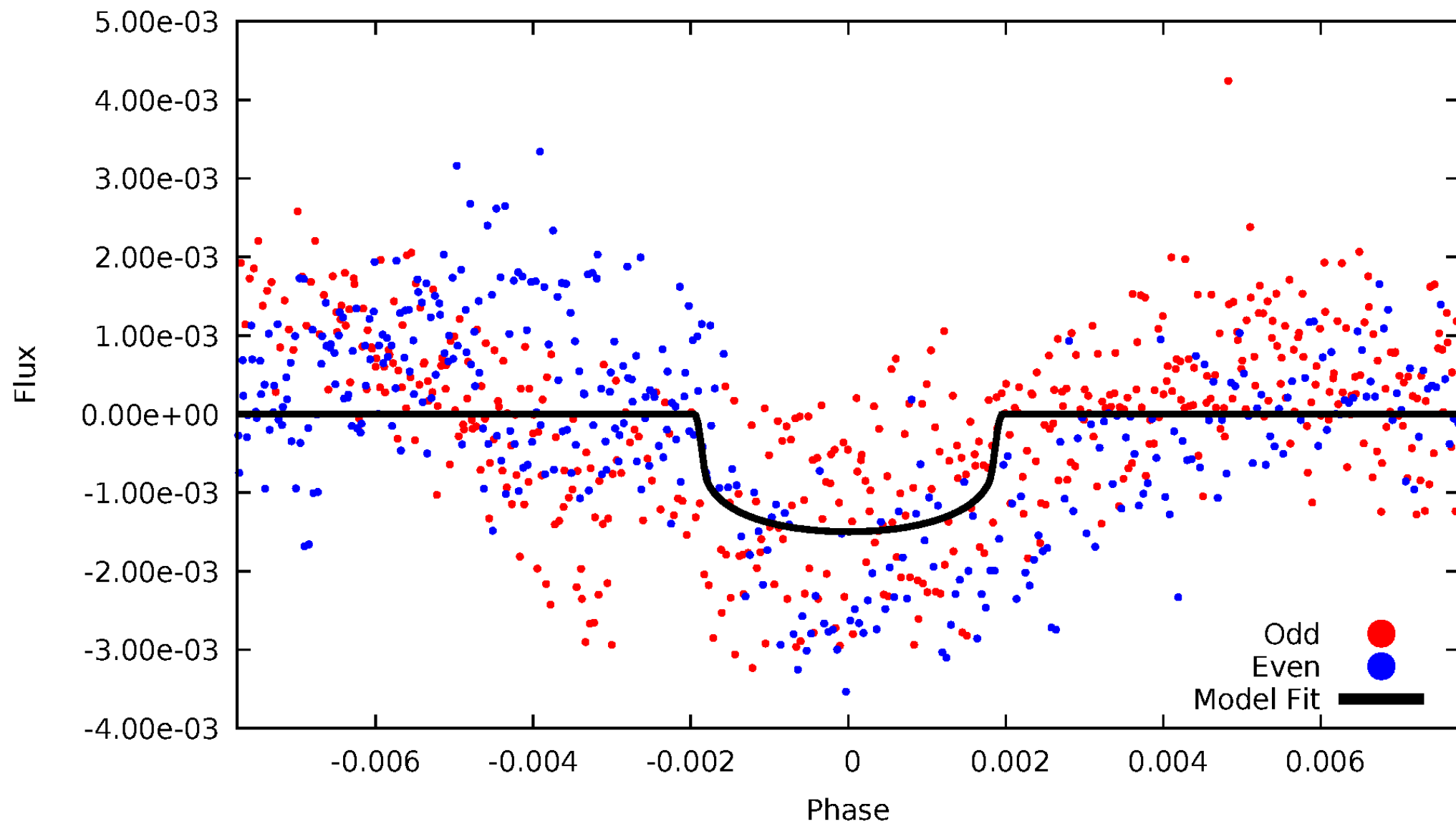


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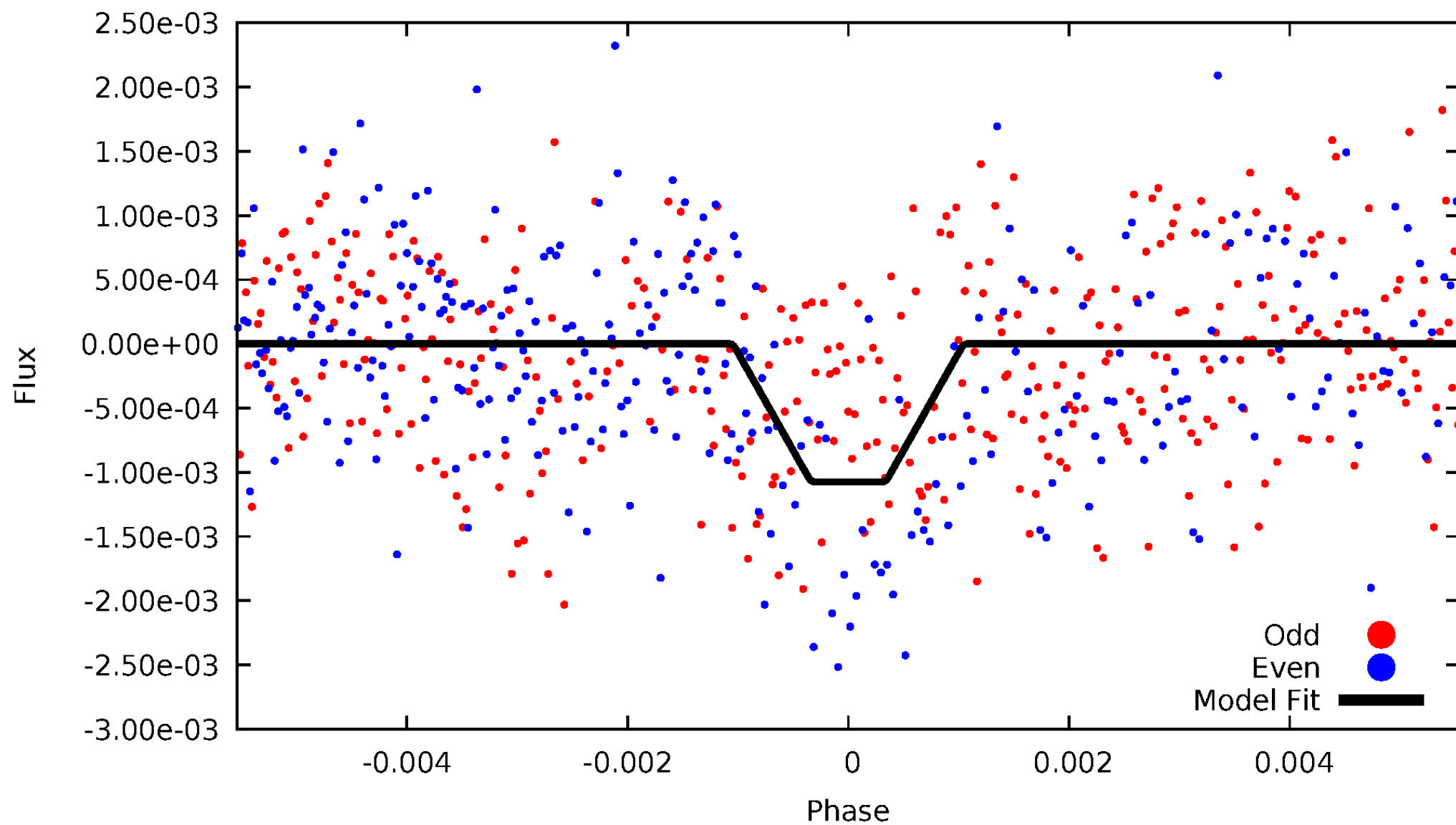
# DV Odd/Even

TCE 010336674-03



# ALT Odd/Even

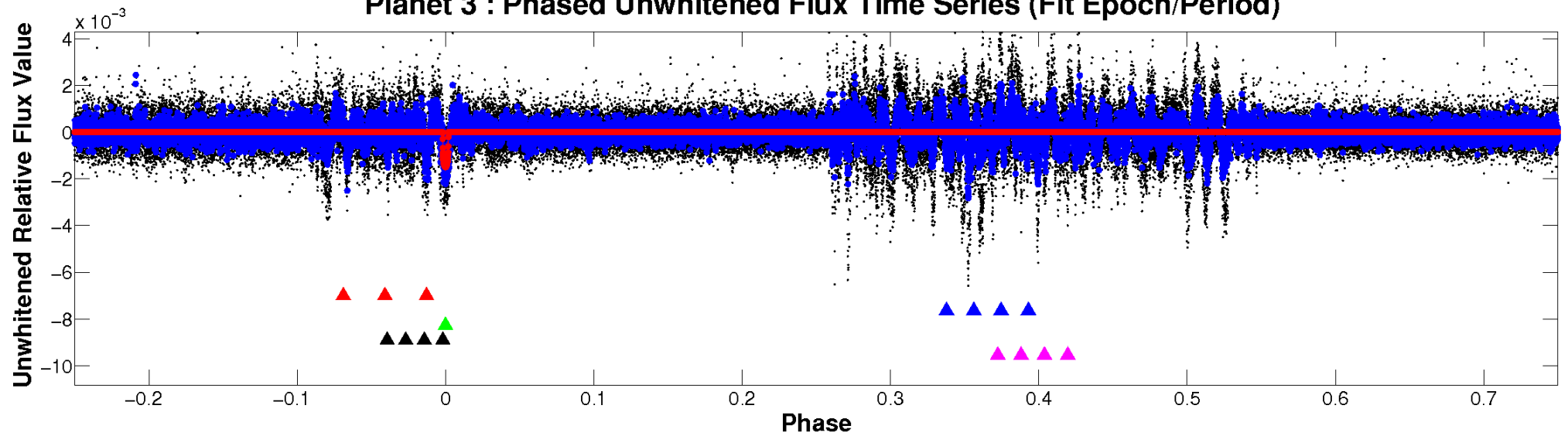
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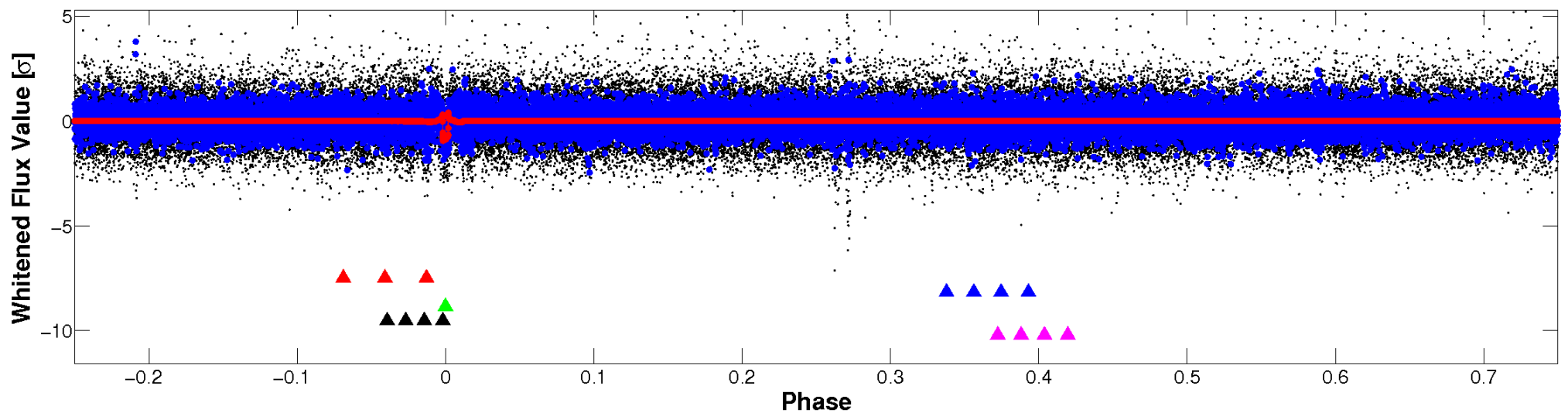


# Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





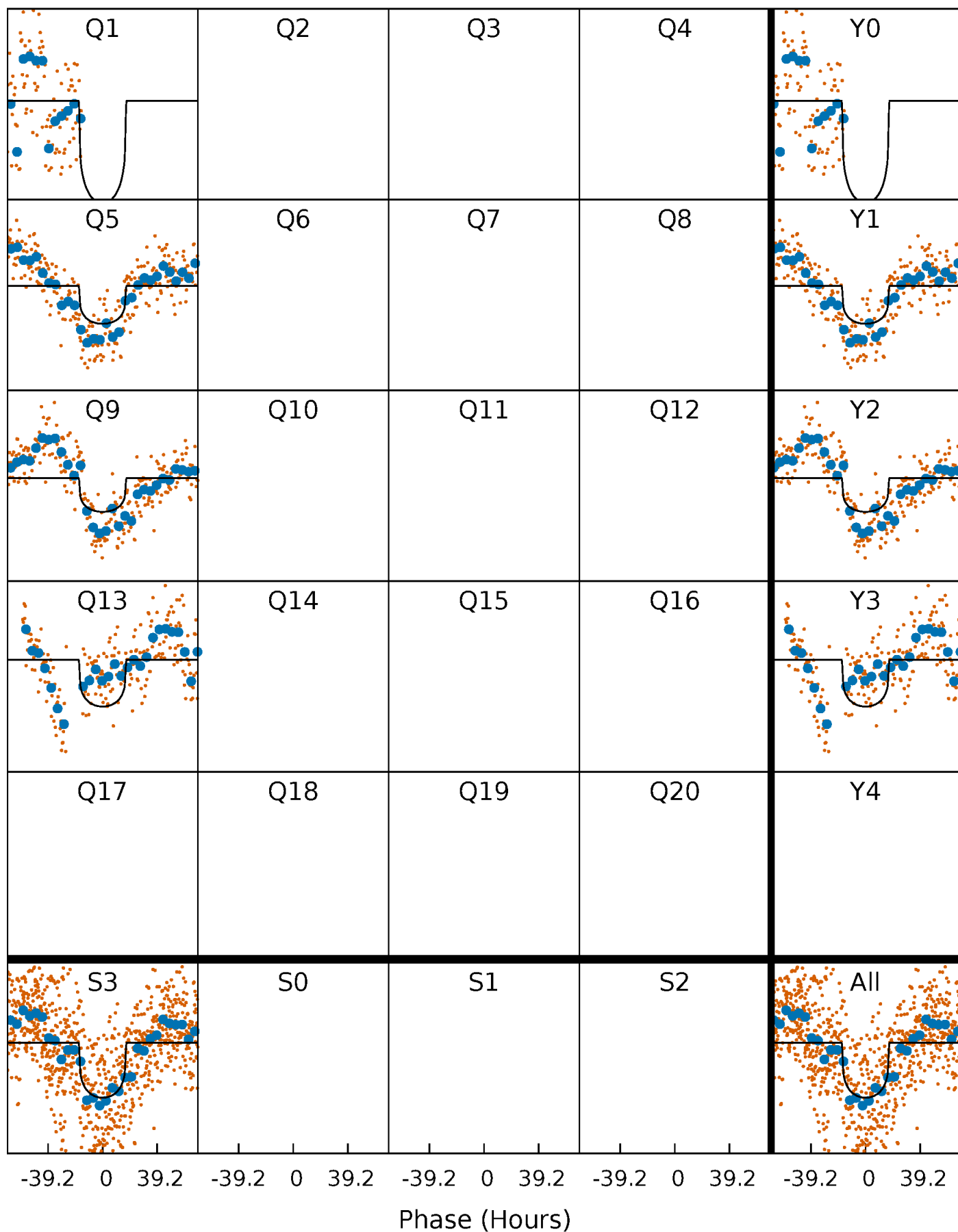
# PDC Quarter-Phased Transit Curves

TCE 010336674-03 P=368.061987 Days  $T_0=165.623924$  (BKJD)



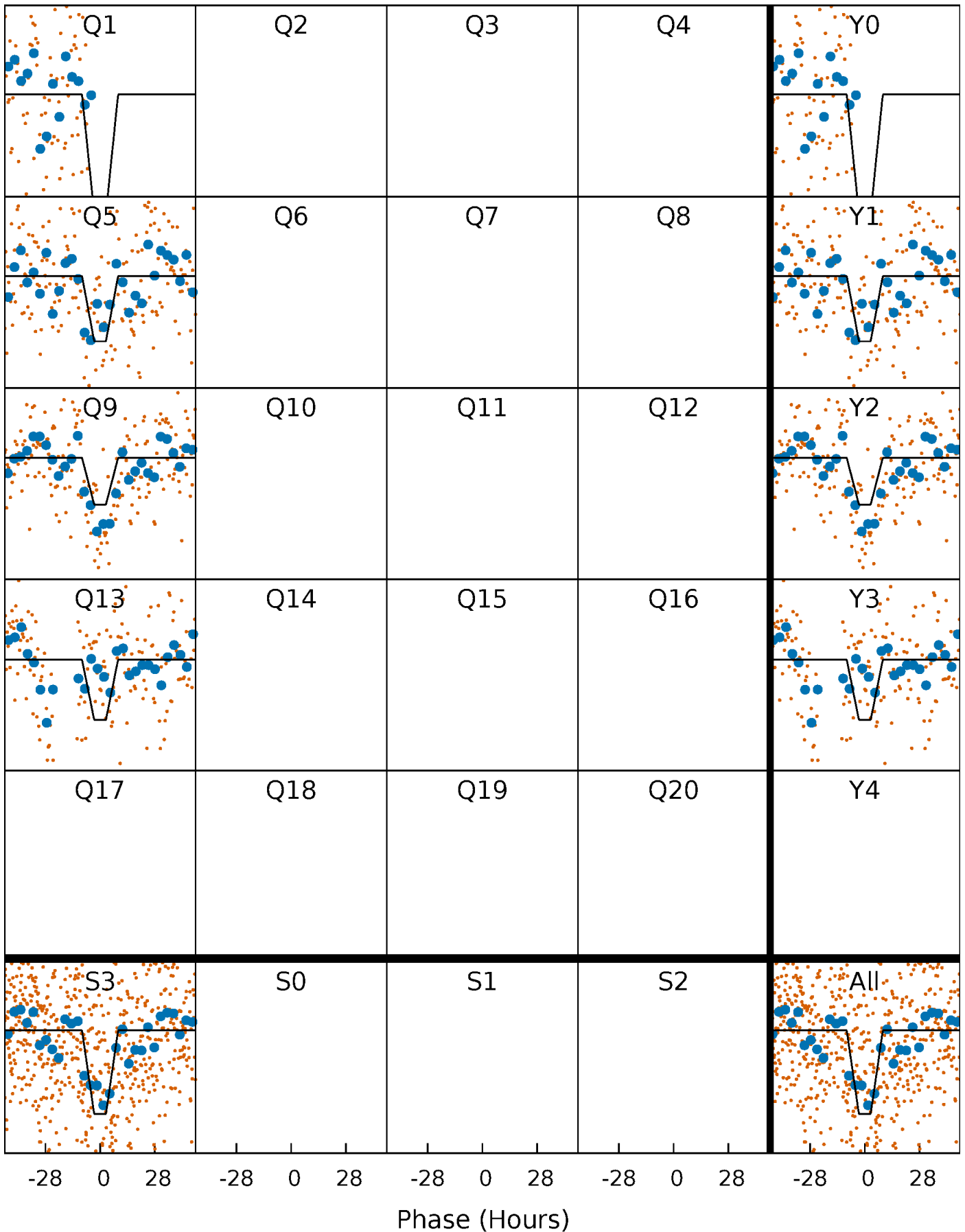
# DV Quarter-Phased Transit Curves

TCE 010336674-03     $P=368.061987$  Days     $T_0=165.623924$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

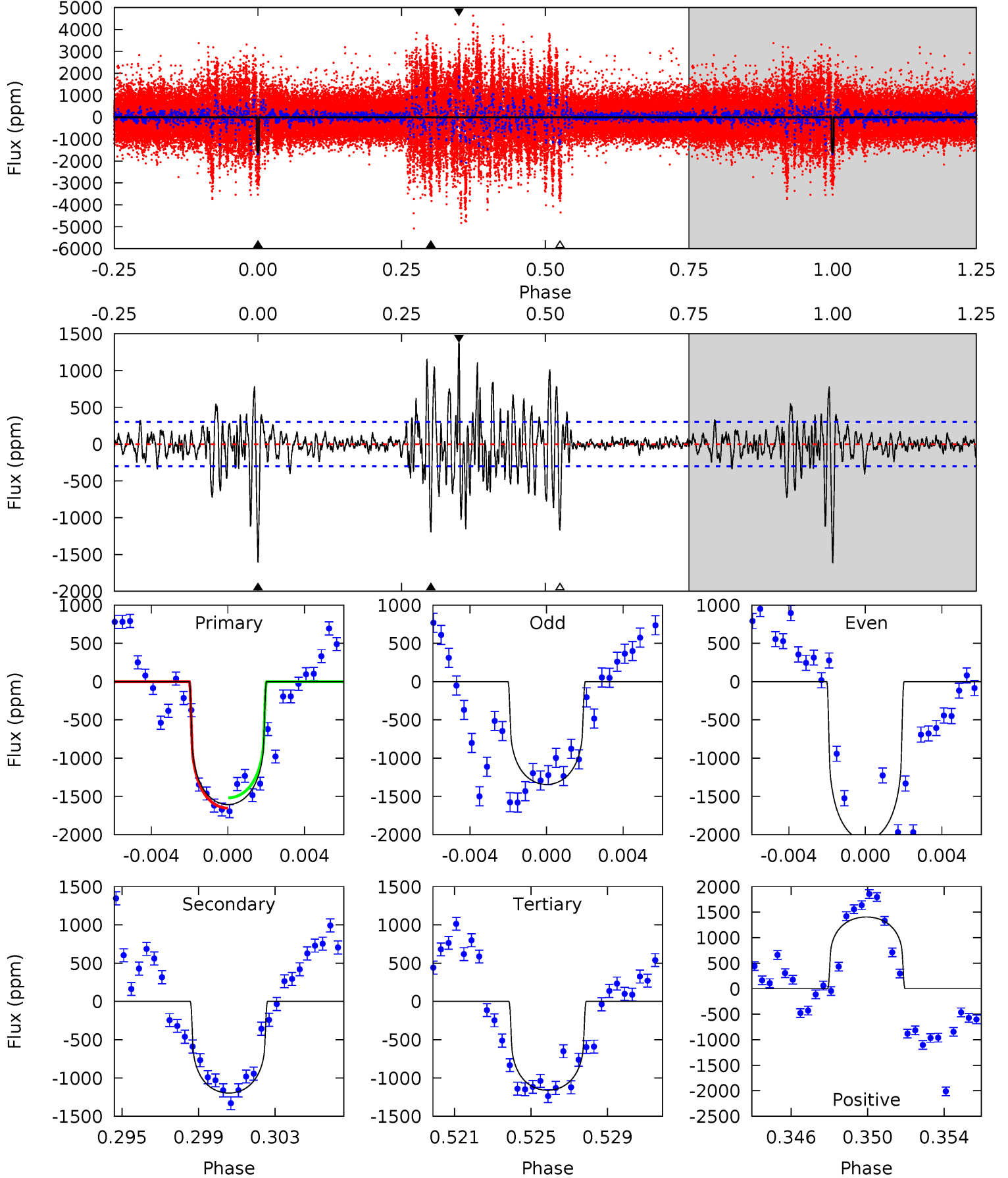
TCE 010336674-03     $P=368.158262$  Days     $T_0=165.230163$  (BKJD)



# DV Model-Shift Uniqueness Test

010336674-03, P = 368.061987 Days, E = 165.623924 Days

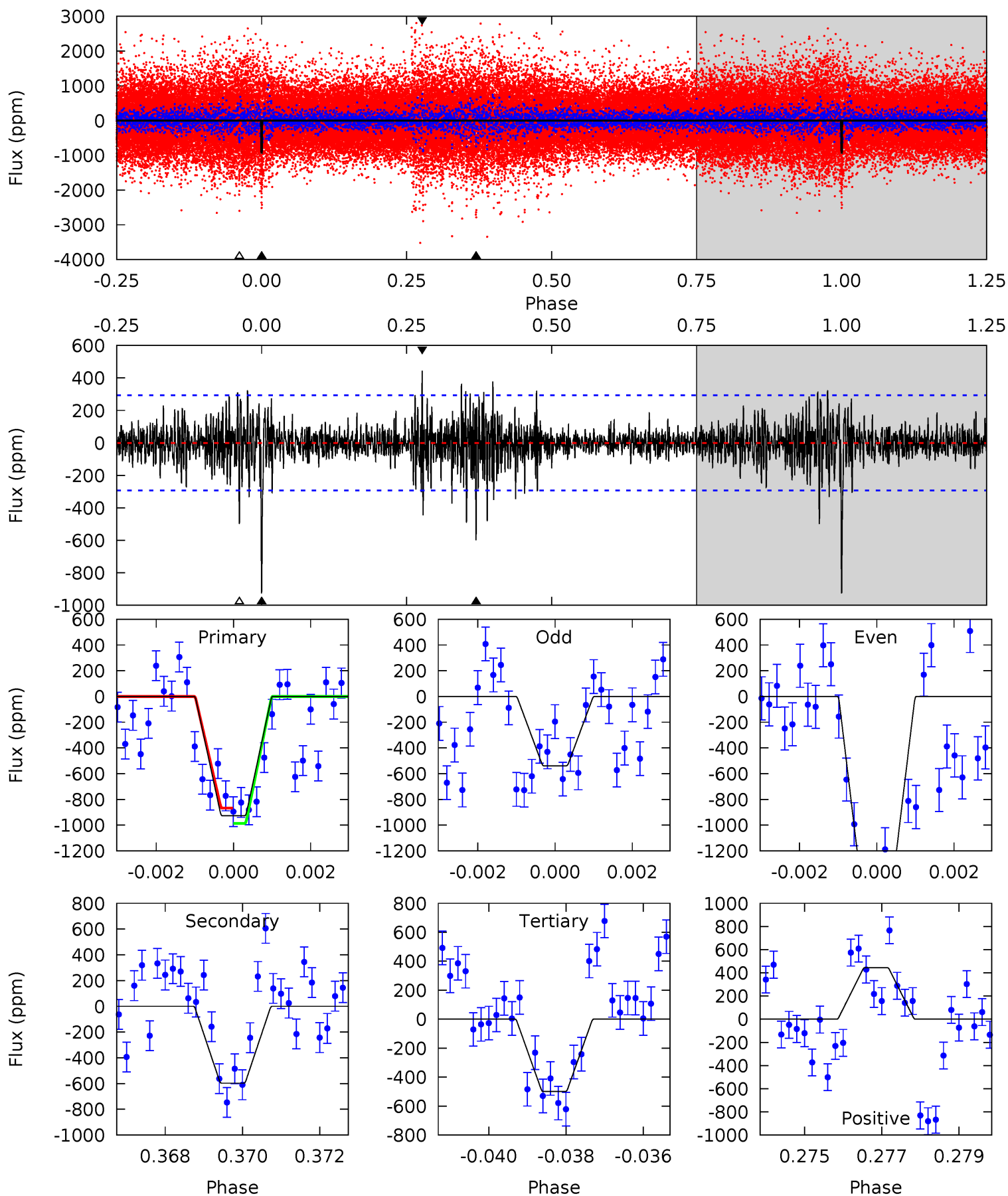
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.7	20.6	20.0	24.2	5.20	2.89	4.62	7.70	3.47	0.63	-3.59	5.61	0.97	0.47	1.16



# Alt Model-Shift Uniqueness Test

010336674-03, P = 368.158262 Days, E = 165.230163 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	10.8	9.06	8.06	5.32	3.07	1.65	7.76	8.76	1.77	2.77	9.90	1.34	0.32	1.07



### Stellar Parameters For KIC 010336674

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5426^{+162}_{-146}$	$4.628^{+0.032}_{-0.097}$	$-0.480^{+0.300}_{-0.300}$	$0.708^{+0.111}_{-0.051}$	$0.785^{+0.082}_{-0.075}$	$3.117^{+0.518}_{-0.998}$
	+3%/-3%	+1%/-2%	+62%/-62%	+16%/-7%	+10%/-10%	+17%/-32%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 010336674-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1197 \pm 58$	$2.81^{+0.52}_{-0.55}$	$297^{+12}_{-9}$	$5399^{+540}_{-403}$	$71798^{+39214}_{-20770}$
Alt.	$-597 \pm 55$	$2.62^{+0.52}_{-0.53}$	$297^{+13}_{-11}$	$4782^{+478}_{-334}$	$41161^{+22628}_{-12874}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

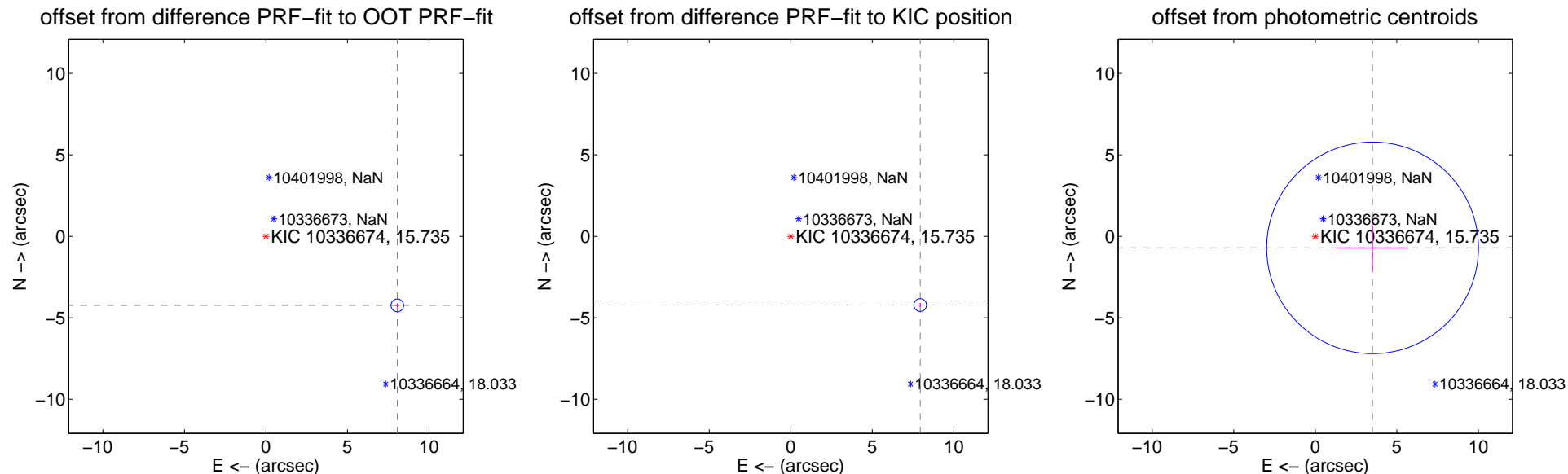
## DV Centroid Data

Supplemental centroid analysis for 010336674-03. Kepler magnitude: 15.73. Transit SNR 11.11

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$9.103 \pm 0.130$	70.24	$-8.056 \pm 0.130$	$-4.238 \pm 0.127$
PRF-fit source offset from KIC position	$8.988 \pm 0.130$	69.37	$-7.938 \pm 0.130$	$-4.216 \pm 0.127$
photometric centroid source offset	$3.58 \pm 2.16$	1.66	$-3.51 \pm 2.19$	$-0.71 \pm 1.44$



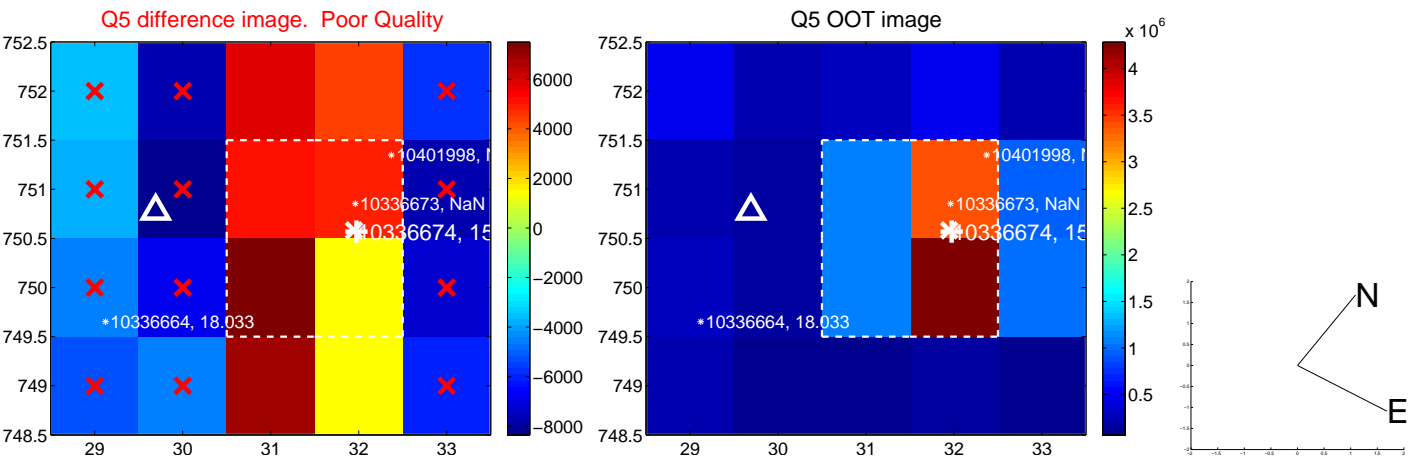
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

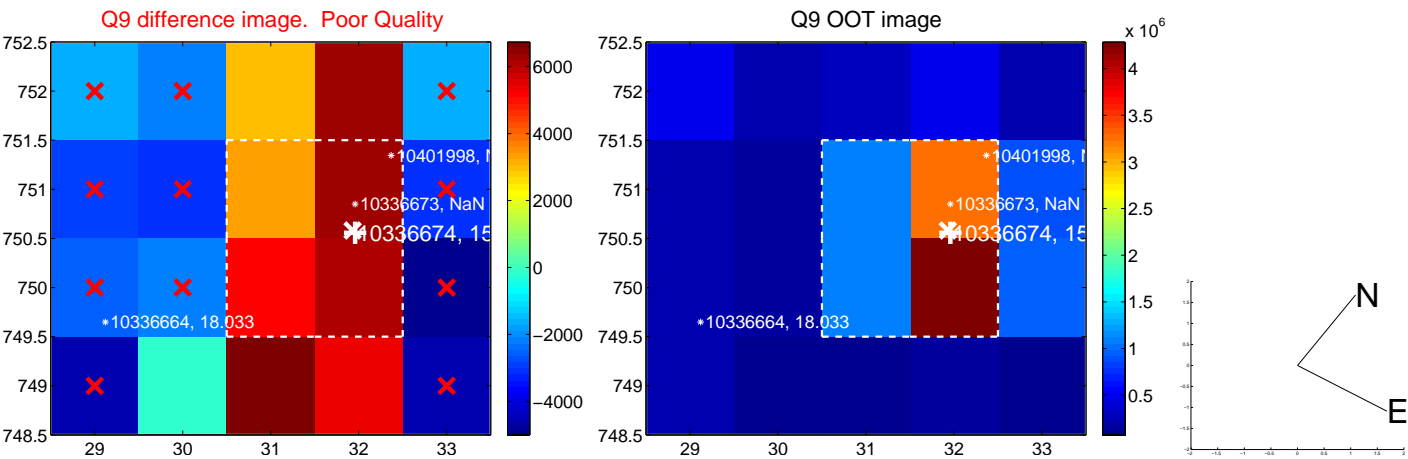




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



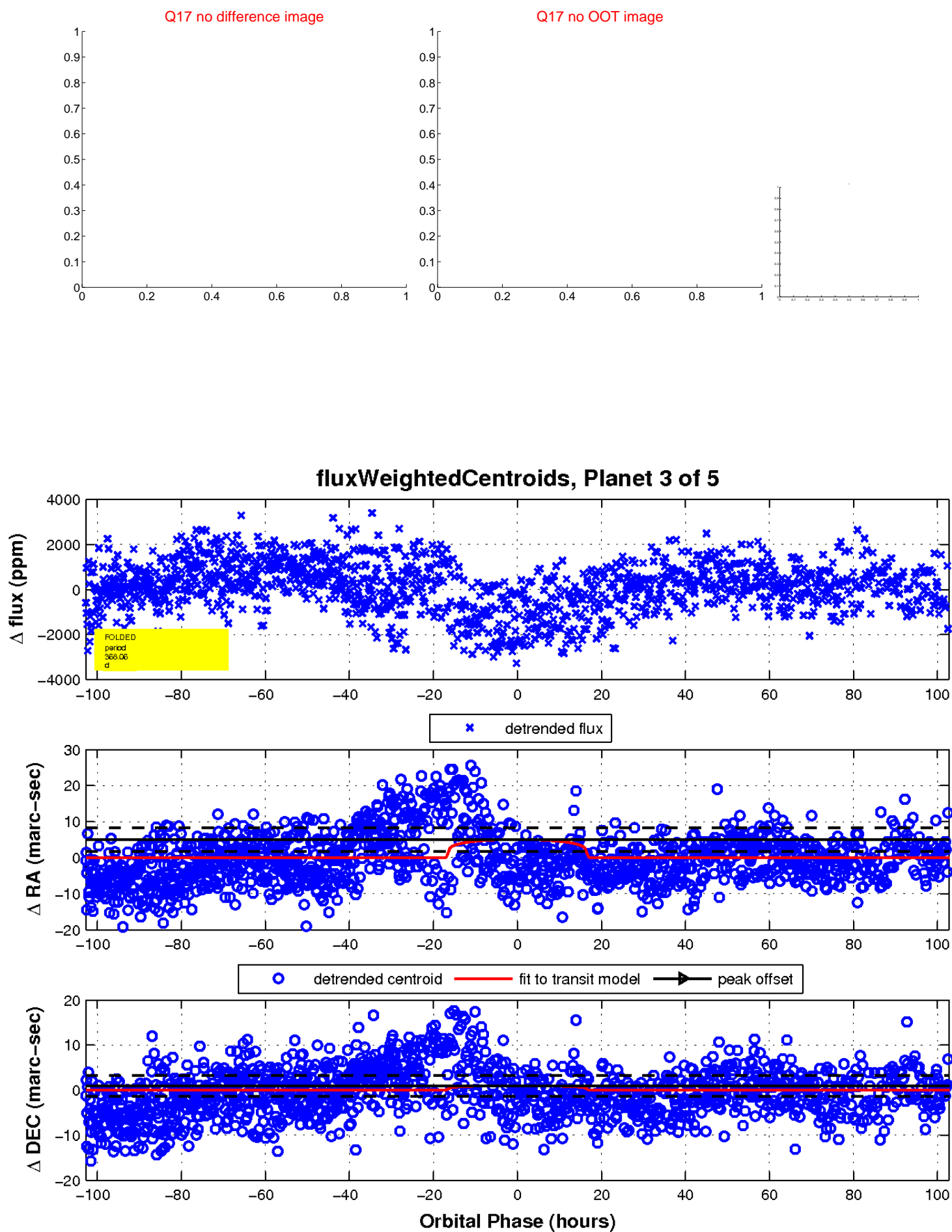
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

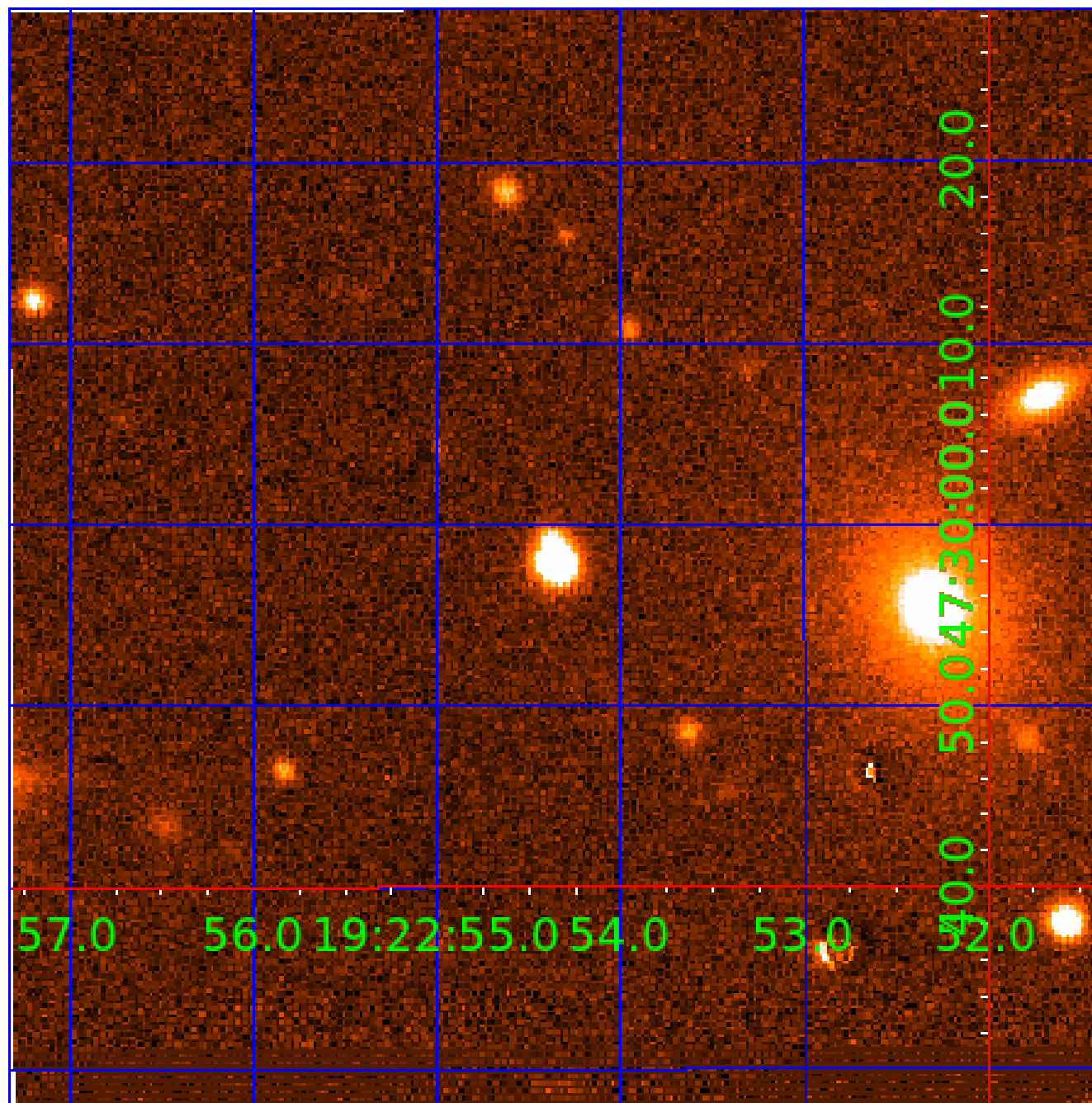


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010336674

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010336674-01	OBS	No	378.381839	508.334001	1919.1	36.673	9.4	11.7	0.71	5426	3.81	0.44
010336674-03	OBS	No	368.061987	165.623924	1498.1	34.269	8.6	11.1	0.71	5426	2.71	0.46
010336674-04	OBS	No	363.460429	164.965697	1531.6	33.983	8.3	9.9	0.71	5426	3.41	0.46
010336674-05	OBS	No	373.853873	302.683613	2204.9	14.951	8.1	7.9	0.71	5426	6.33	0.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010336674-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—CENT_FEW_DIFFS
010336674-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
010336674-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
010336674-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

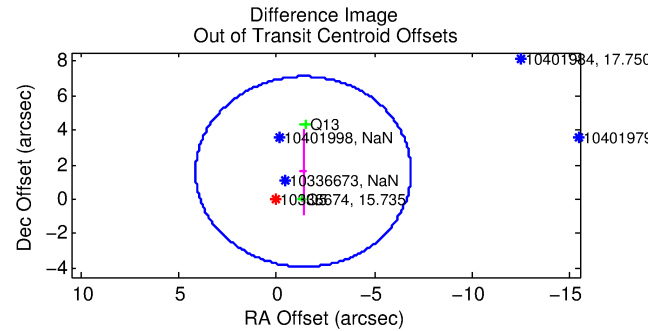
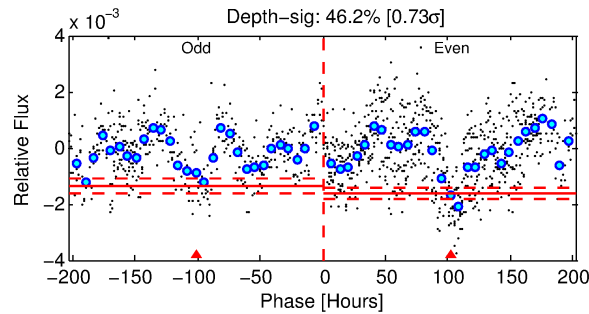
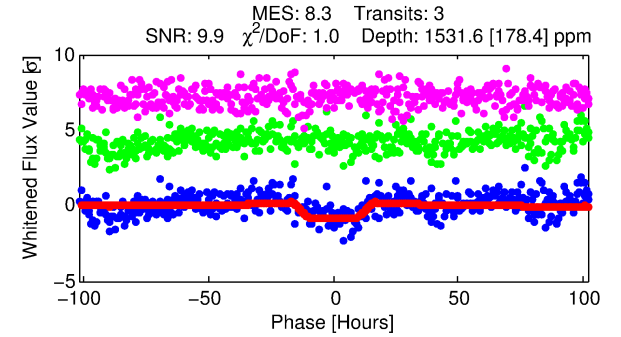
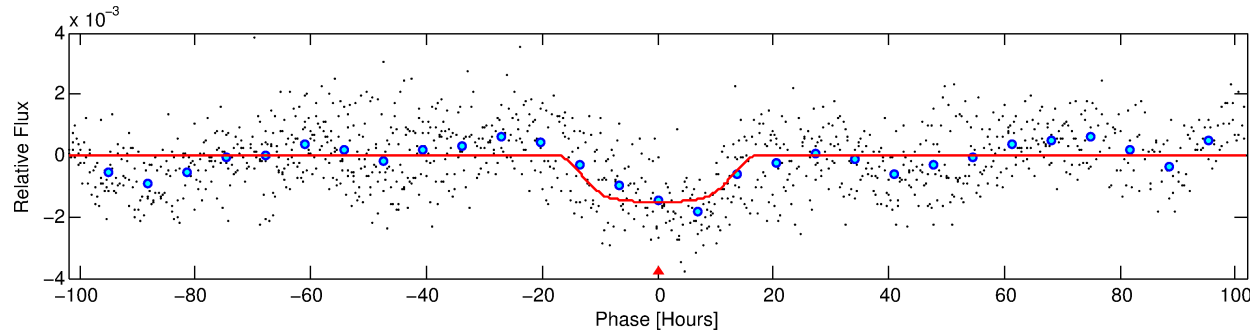
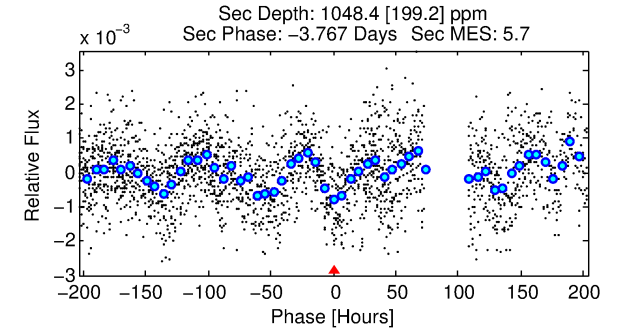
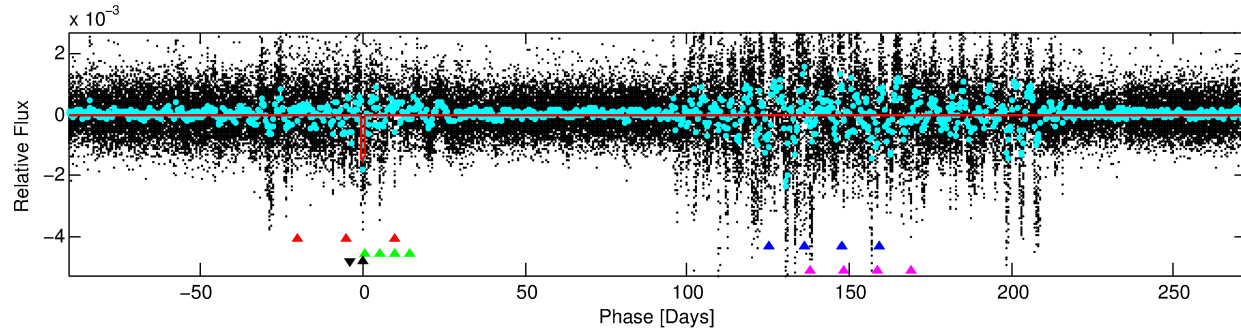
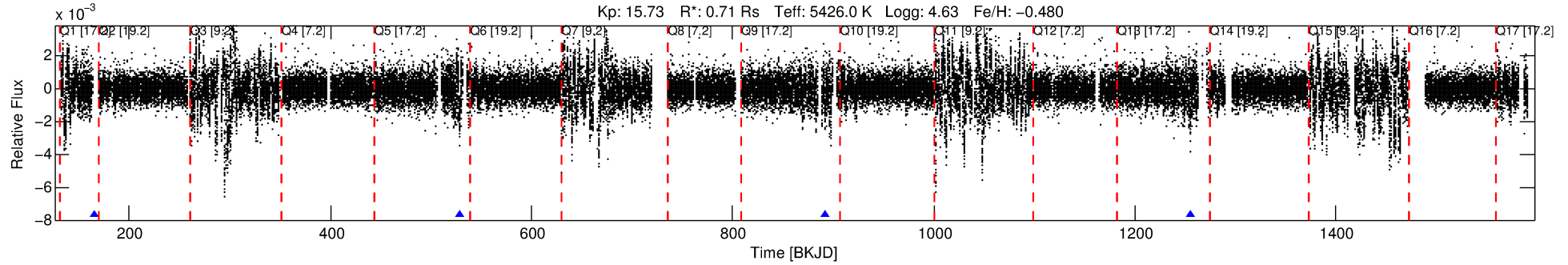
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010336674-04

No Significant Match Found

# DV One-Page Summary

KIC: 10336674 Candidate: 4 of 5 Period: 363.460 d



## DV Fit Results:

Period = 363.46043 [0.04055] d  
Epoch = 164.9657 [0.0843] BKJD  
Rp/R\* = 0.0441 [0.0034]  
b = 0.92 [0.03]  
Seff = 0.46 [0.10]  
Teq = 210 [11] K  
Rp = 3.41 [0.60] Re  
a = 0.9163 [0.1176] AU  
Ag = 41747.11 [12747.61] [3.27σ]  
Teffp = 4650 [317] K [13.99σ]

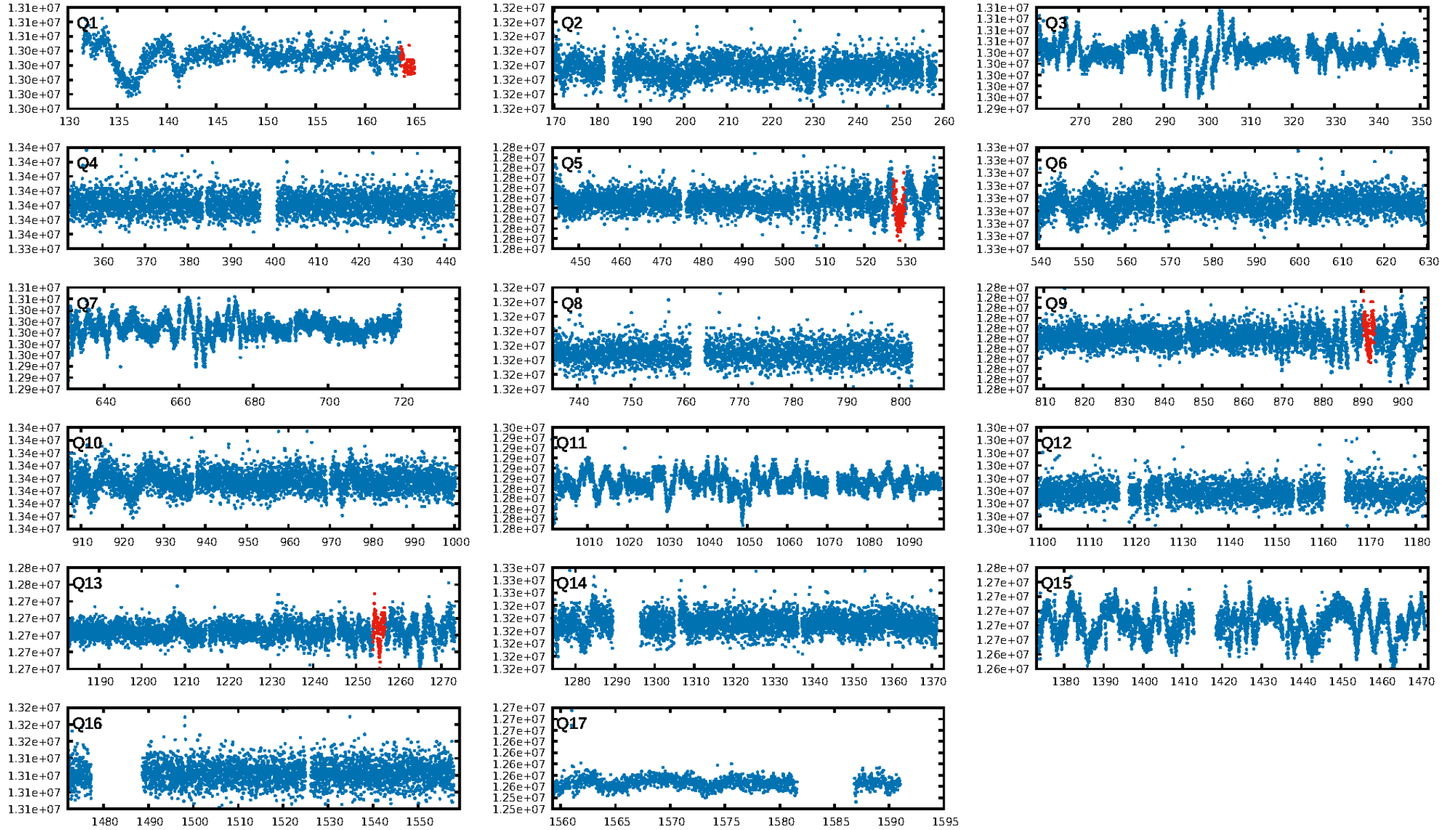
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 97.8% [2.29σ]  
ModelChiSquare2-sig: 12.7%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.37e-08**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.489  
Centroid-sig: 0.3%  
Centroid-so: 4.096 arcsec [2.16σ]  
OotOffset-rm: 2.101 arcsec [1.14σ]  
KicOffset-rm: 2.064 arcsec [1.04σ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:57:33 Z

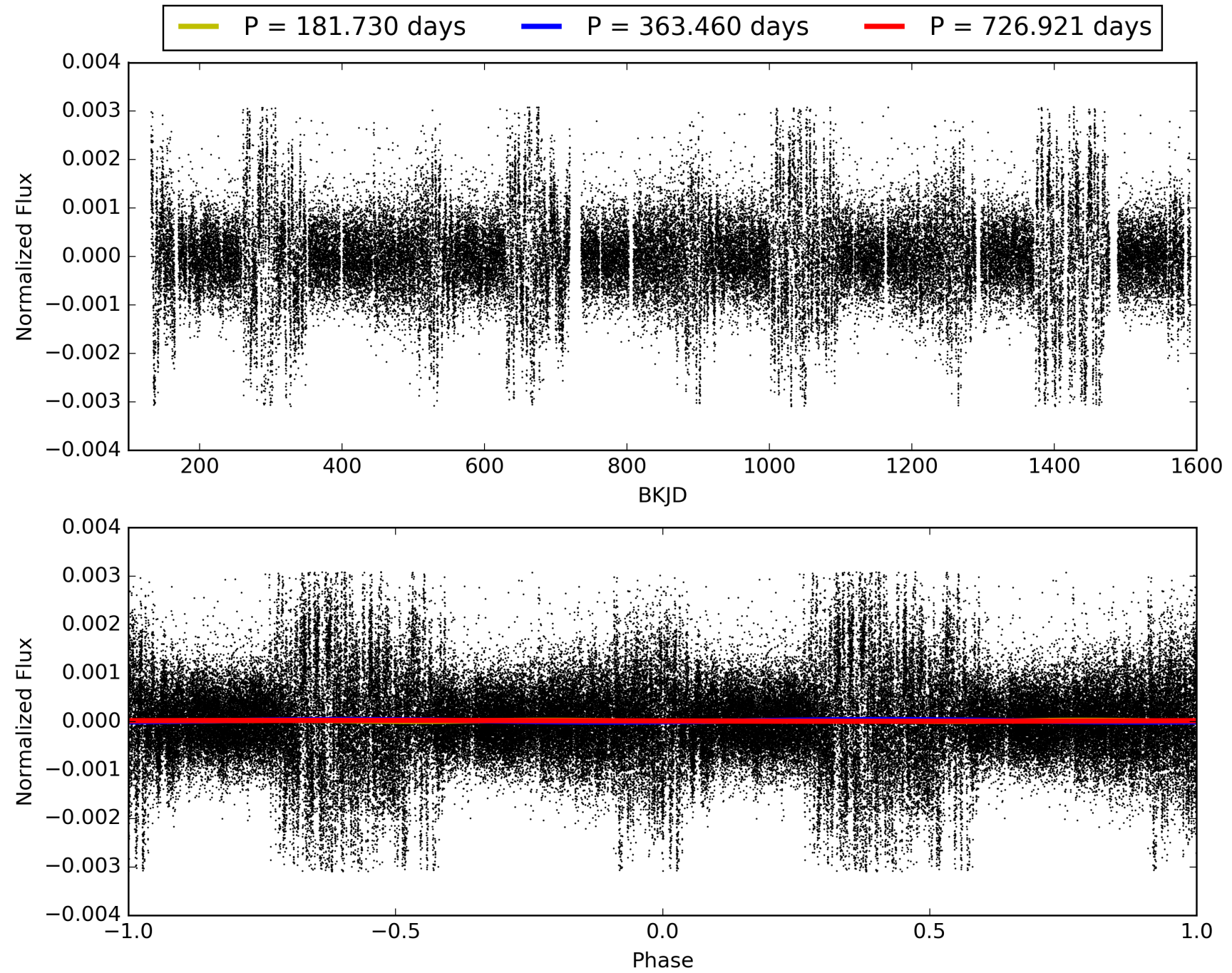
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010336674-04, PDC Light Curves



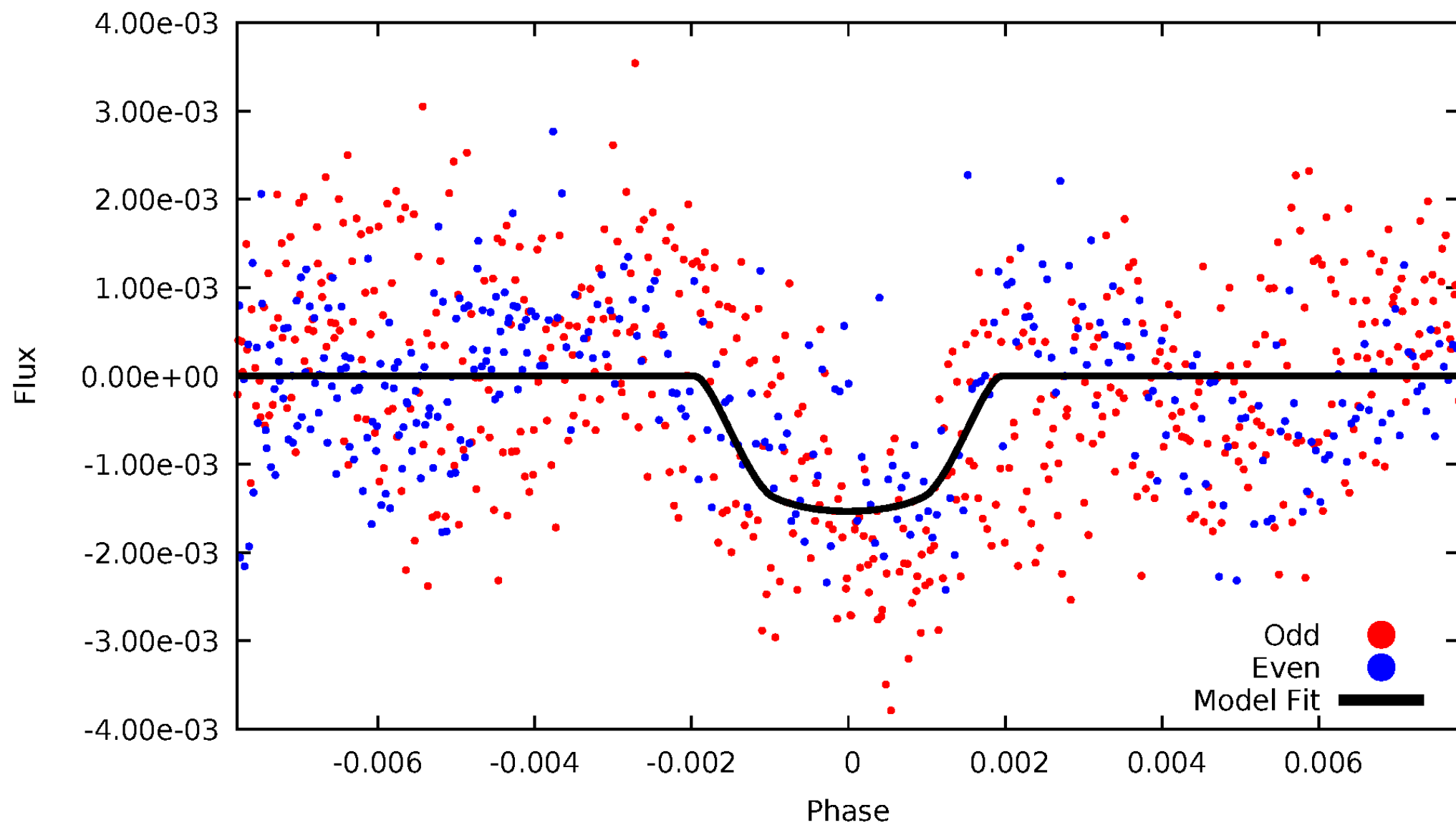


TCE 010336674-04



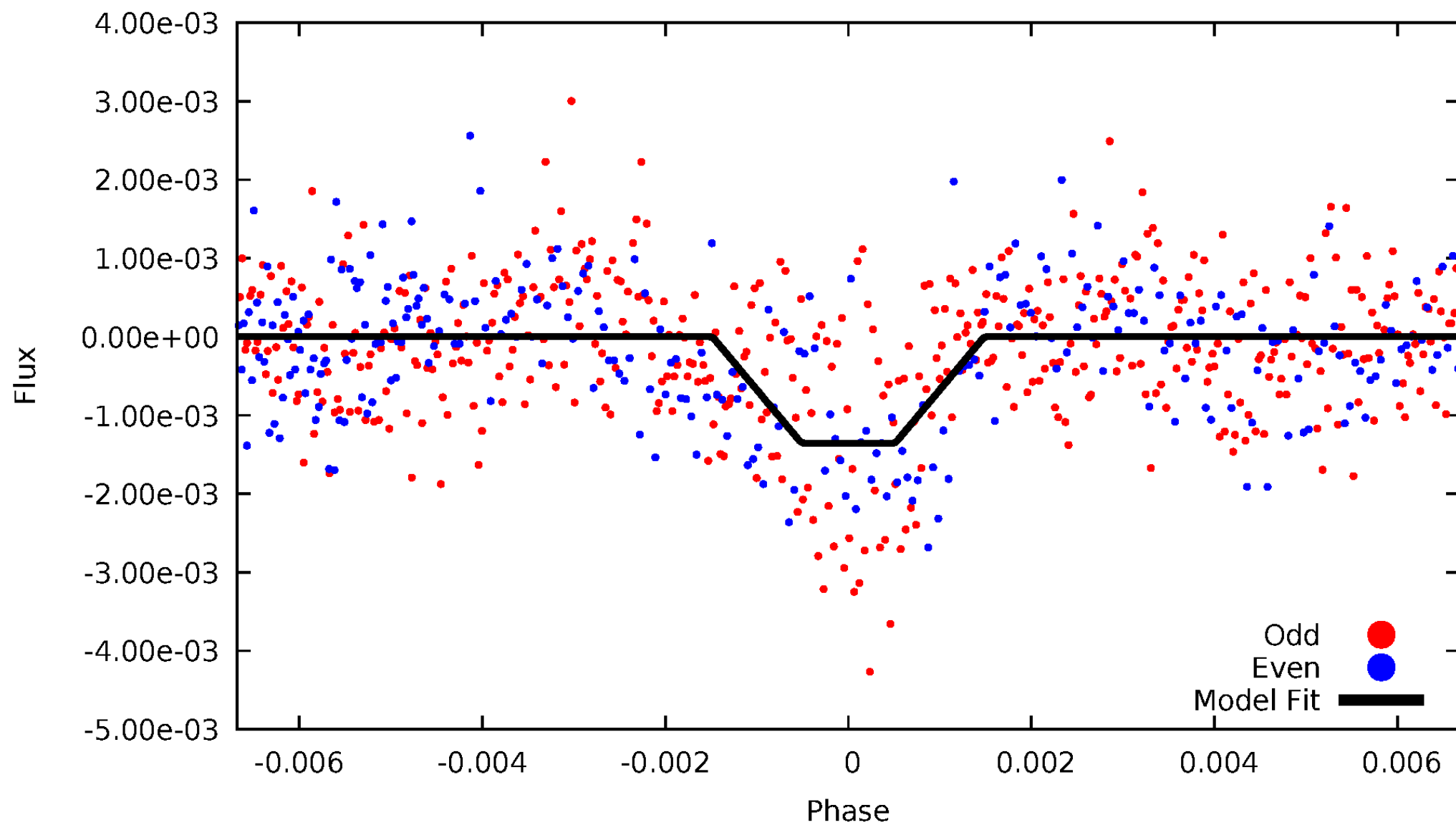
# DV Odd/Even

TCE 010336674-04



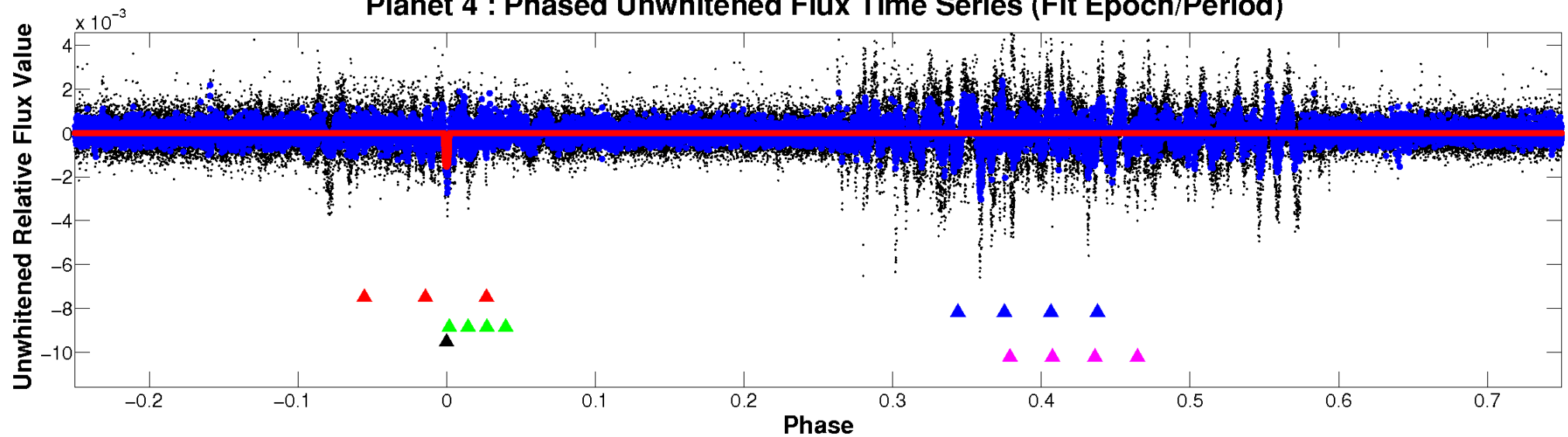
# ALT Odd/Even

TCE 010336674-04

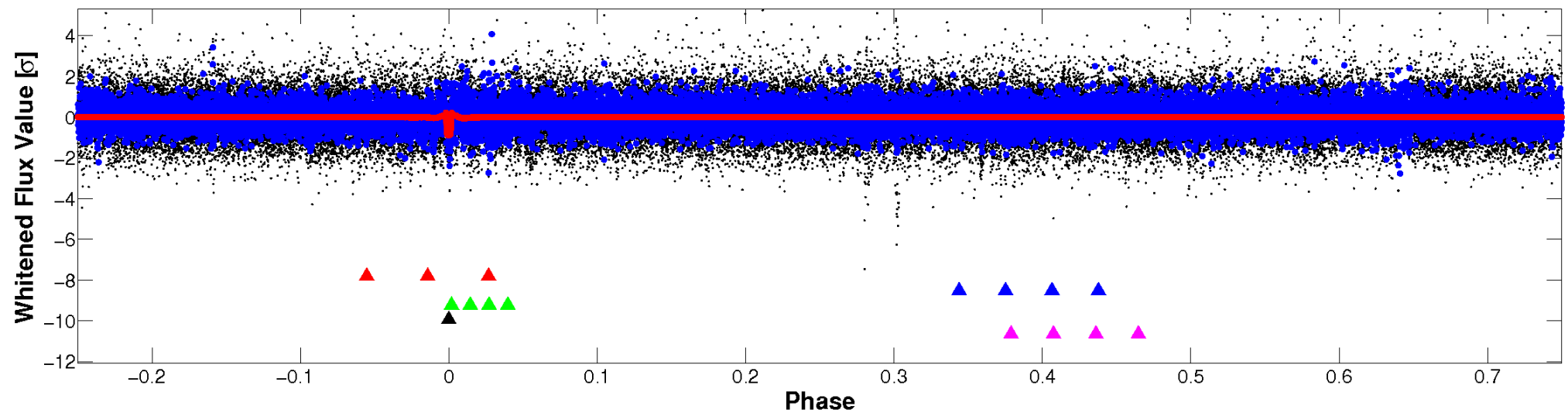


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

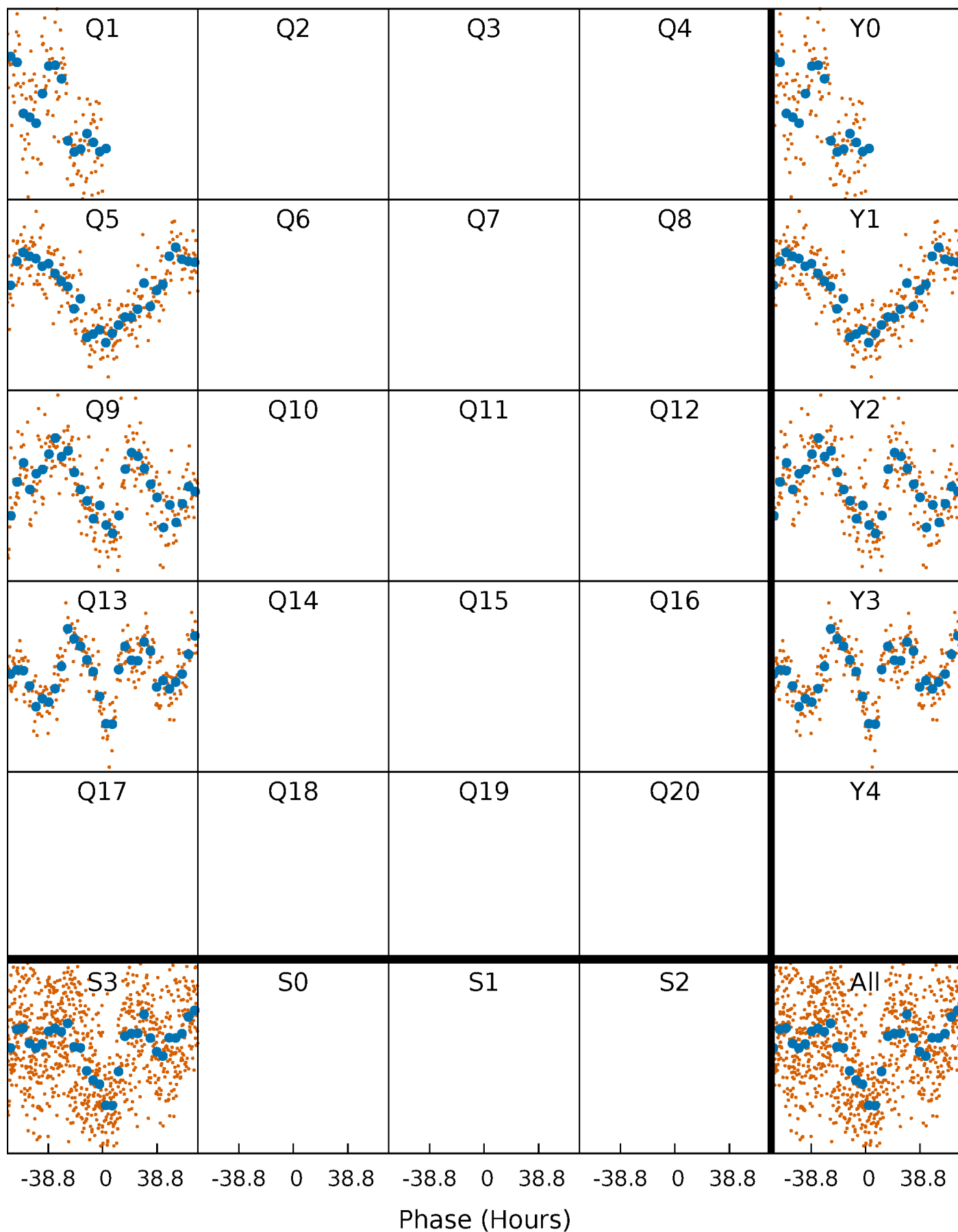


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



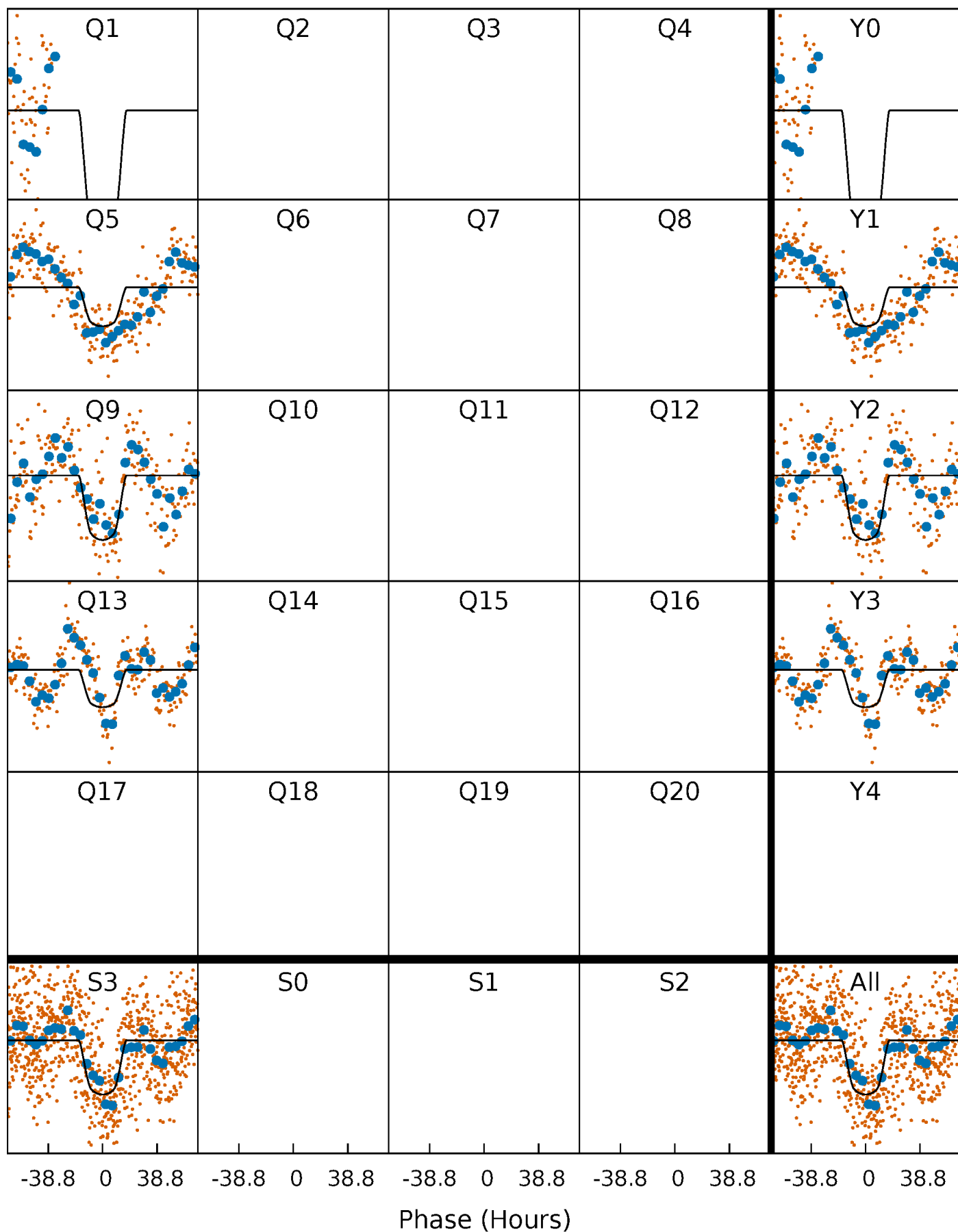
# PDC Quarter-Phased Transit Curves

TCE 010336674-04     $P=363.460429$  Days     $T_0=164.965698$  (BKJD)



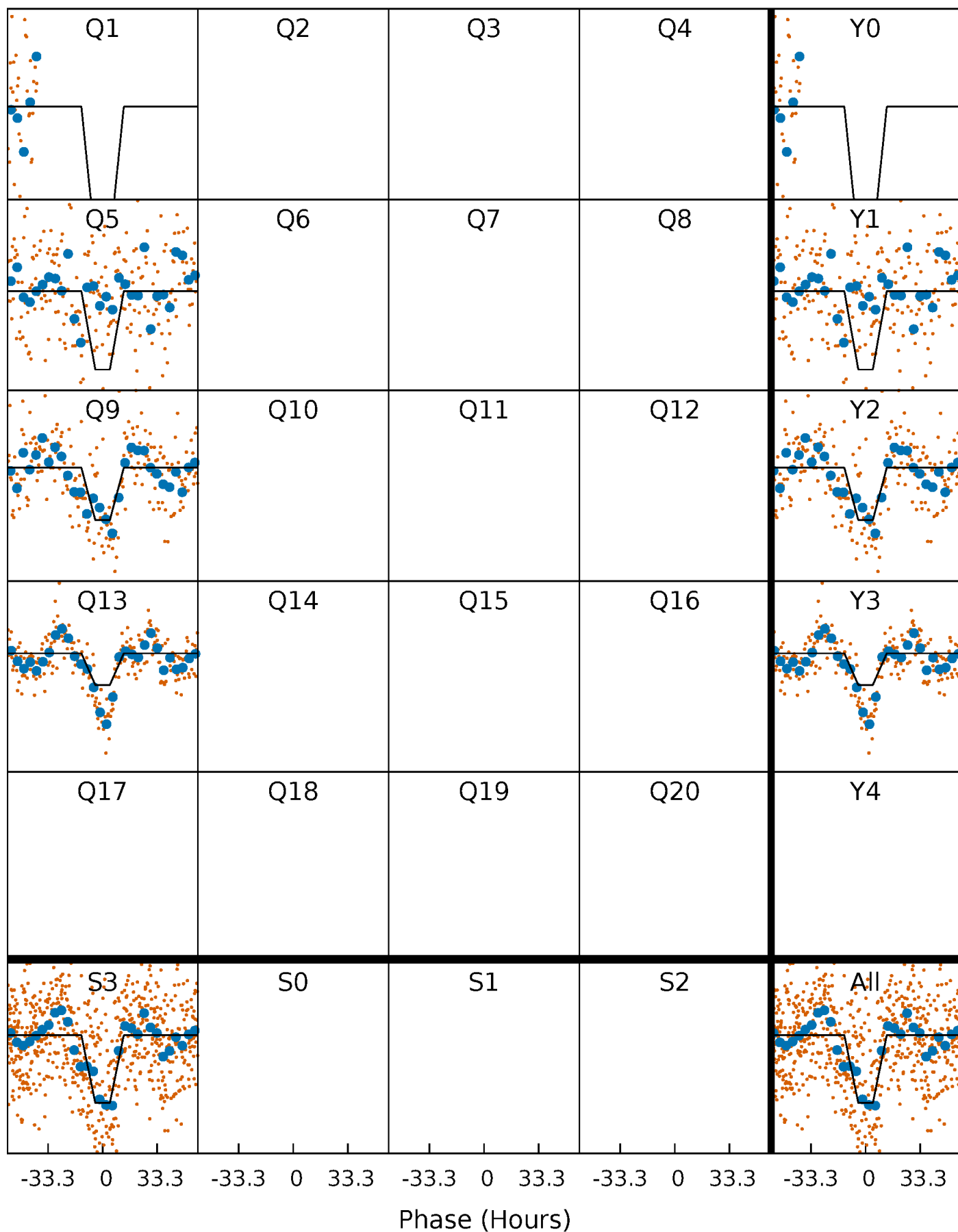
# DV Quarter-Phased Transit Curves

TCE 010336674-04     $P=363.460429$  Days     $T_0=164.965698$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010336674-04 P=363.438109 Days  $T_0=165.144924$  (BKJD)

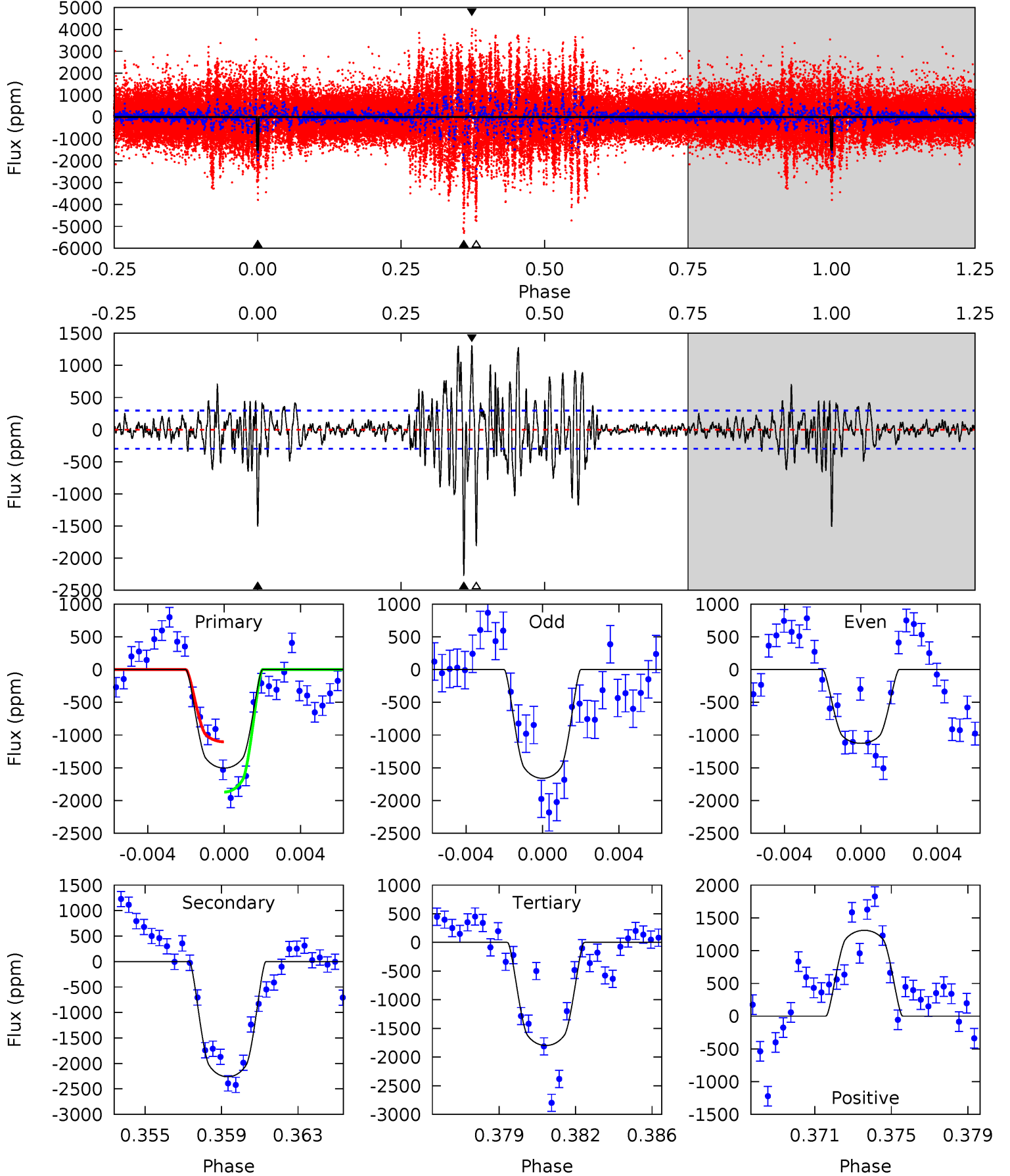




# DV Model-Shift Uniqueness Test

010336674-04, P = 363.460429 Days, E = 164.965698 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.4	39.7	31.5	23.0	5.20	2.89	5.41	-5.16	3.40	8.13	16.7	4.07	1.25	0.37	6.80

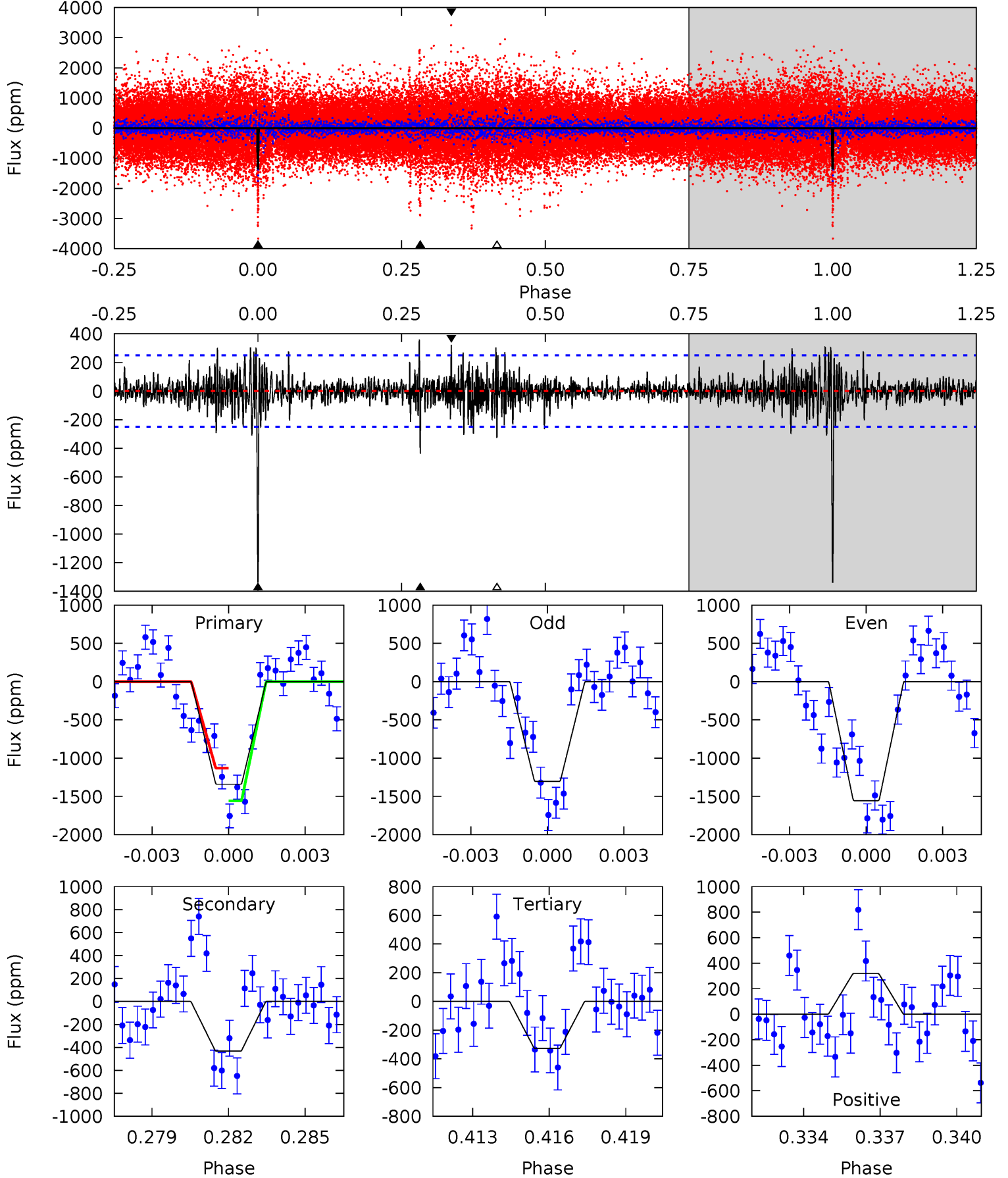




# Alt Model-Shift Uniqueness Test

010336674-04,  $P = 363.438109$  Days,  $E = 165.144924$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.2	9.11	6.87	6.71	5.25	2.96	1.52	21.3	21.5	2.23	2.40	2.46	0.92	0.21	4.48



### Stellar Parameters For KIC 010336674

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5426^{+162}_{-146}$	$4.628^{+0.032}_{-0.097}$	$-0.480^{+0.300}_{-0.300}$	$0.708^{+0.111}_{-0.051}$	$0.785^{+0.082}_{-0.075}$	$3.117^{+0.518}_{-0.998}$
	+3%/-3%	+1%/-2%	+62%/-62%	+16%/-7%	+10%/-10%	+17%/-32%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 010336674-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-2262 \pm 57$	$3.50^{+0.36}_{-0.33}$	$299^{+12}_{-11}$	$5627^{+301}_{-255}$	$84945^{+17324}_{-13957}$
Alt.	$-433 \pm 48$	$2.91^{+0.34}_{-0.31}$	$297^{+12}_{-10}$	$4303^{+193}_{-207}$	$23594^{+6305}_{-5296}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

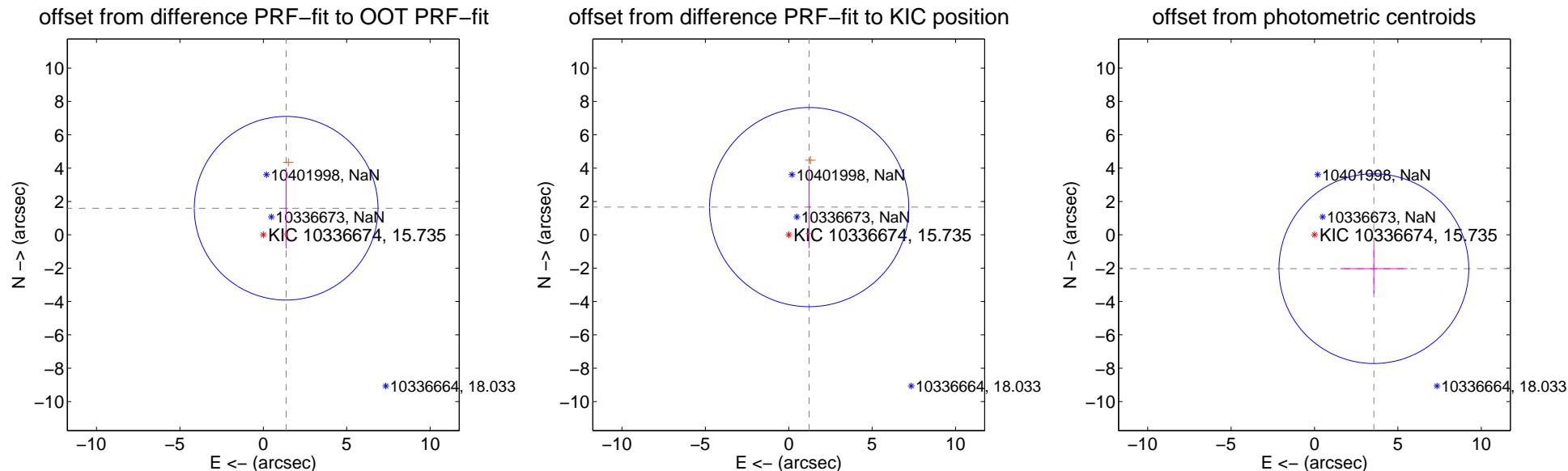
## DV Centroid Data

Supplemental centroid analysis for 010336674-04. Kepler magnitude: 15.73. Transit SNR 9.91

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.101 \pm 1.835$	1.14	$-1.369 \pm 0.112$	$1.594 \pm 2.417$
PRF-fit source offset from KIC position	$2.064 \pm 1.991$	1.04	$-1.222 \pm 0.086$	$1.663 \pm 2.470$
photometric centroid source offset	$4.10 \pm 1.90$	2.16	$-3.56 \pm 2.01$	$-2.03 \pm 1.49$

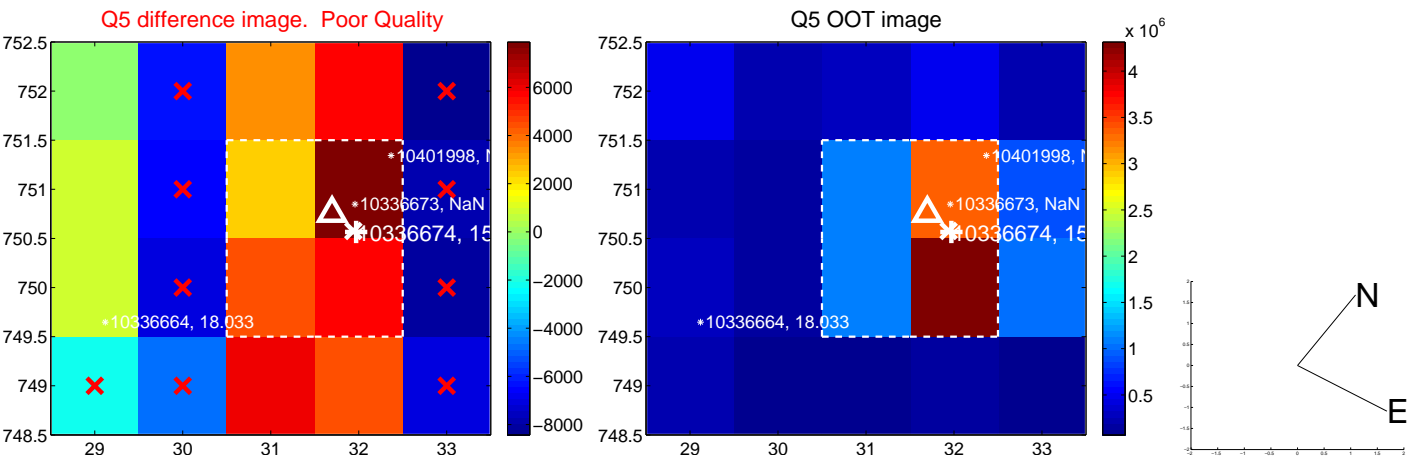


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

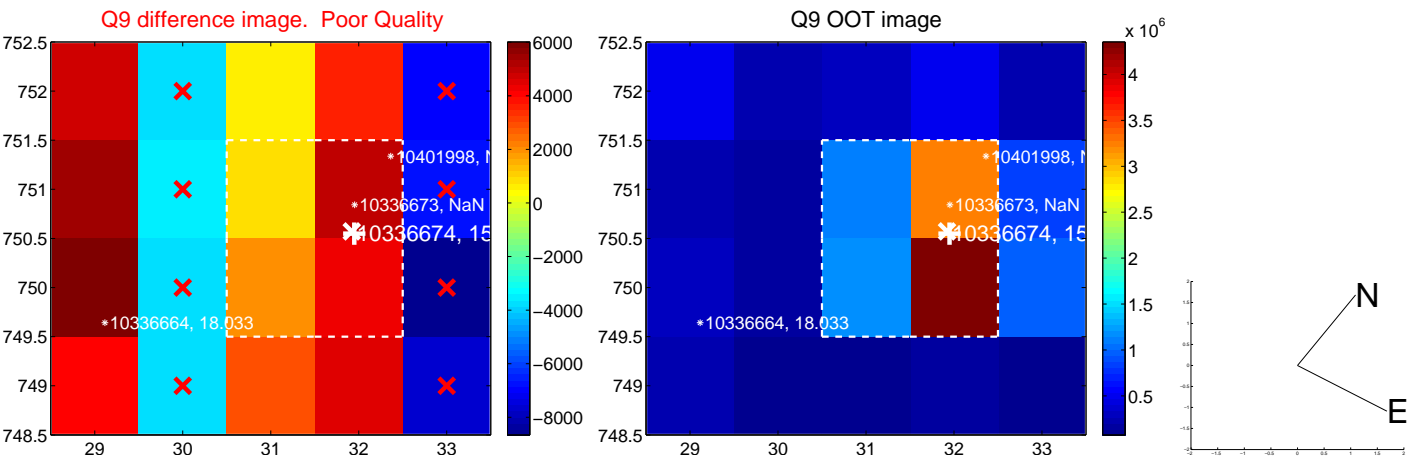
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



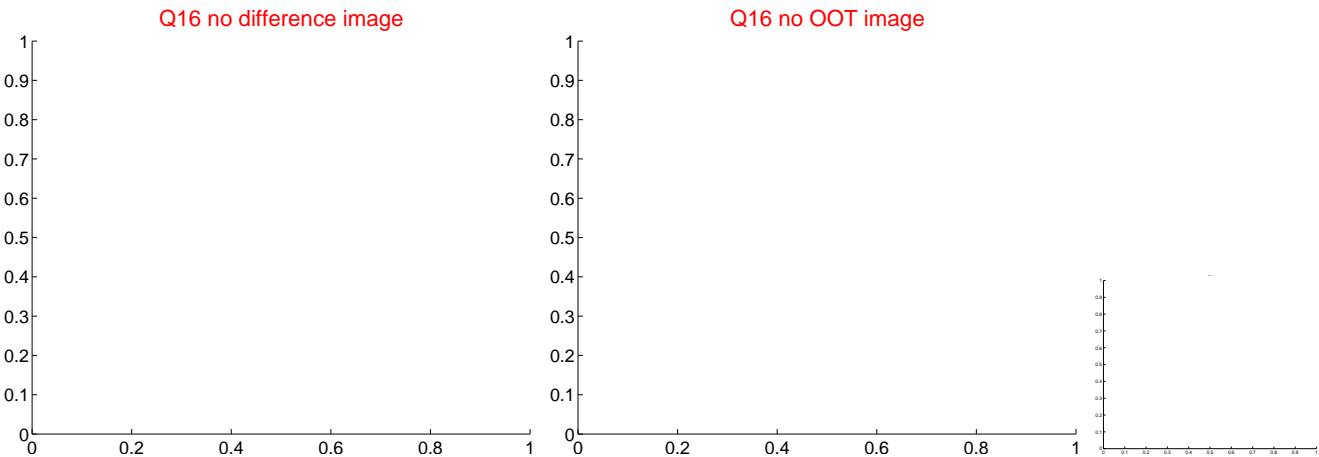
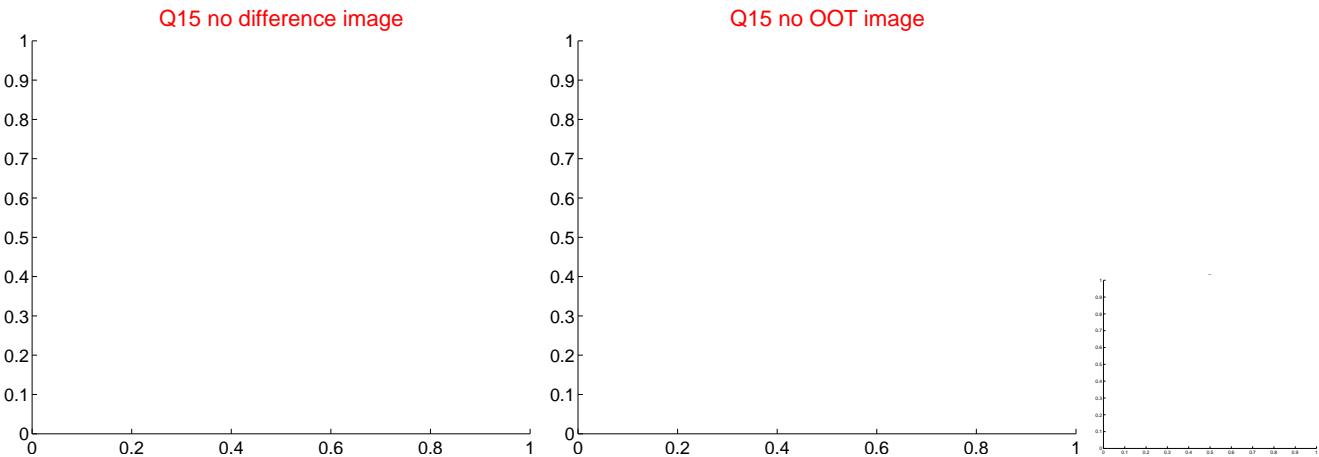
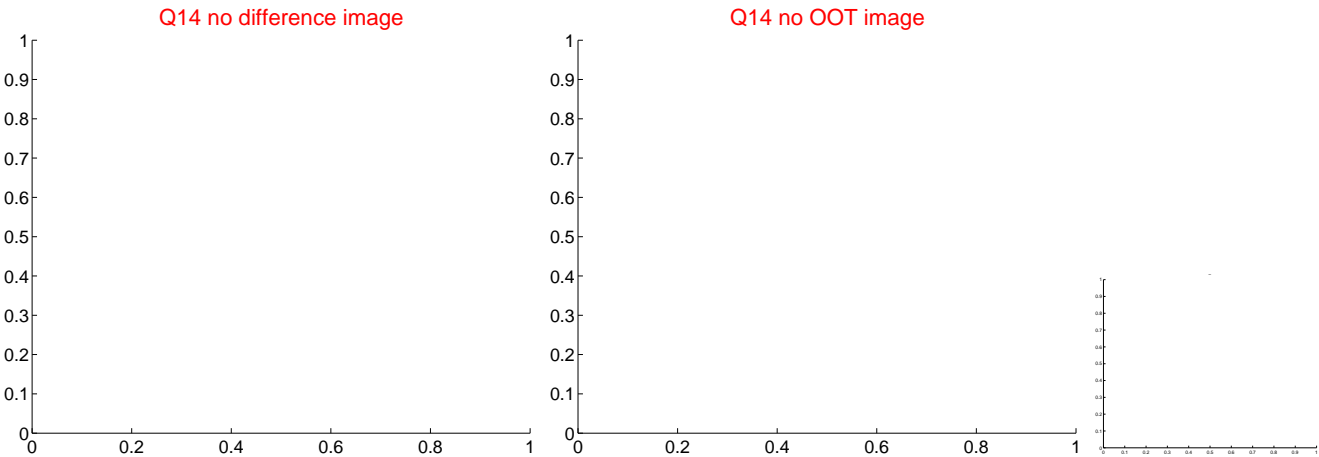
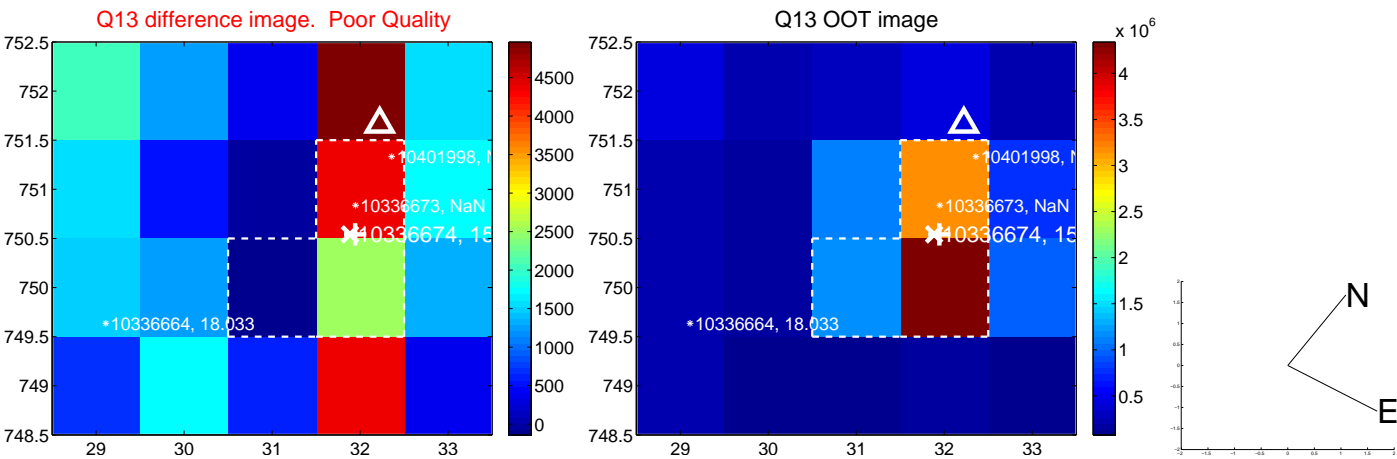
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



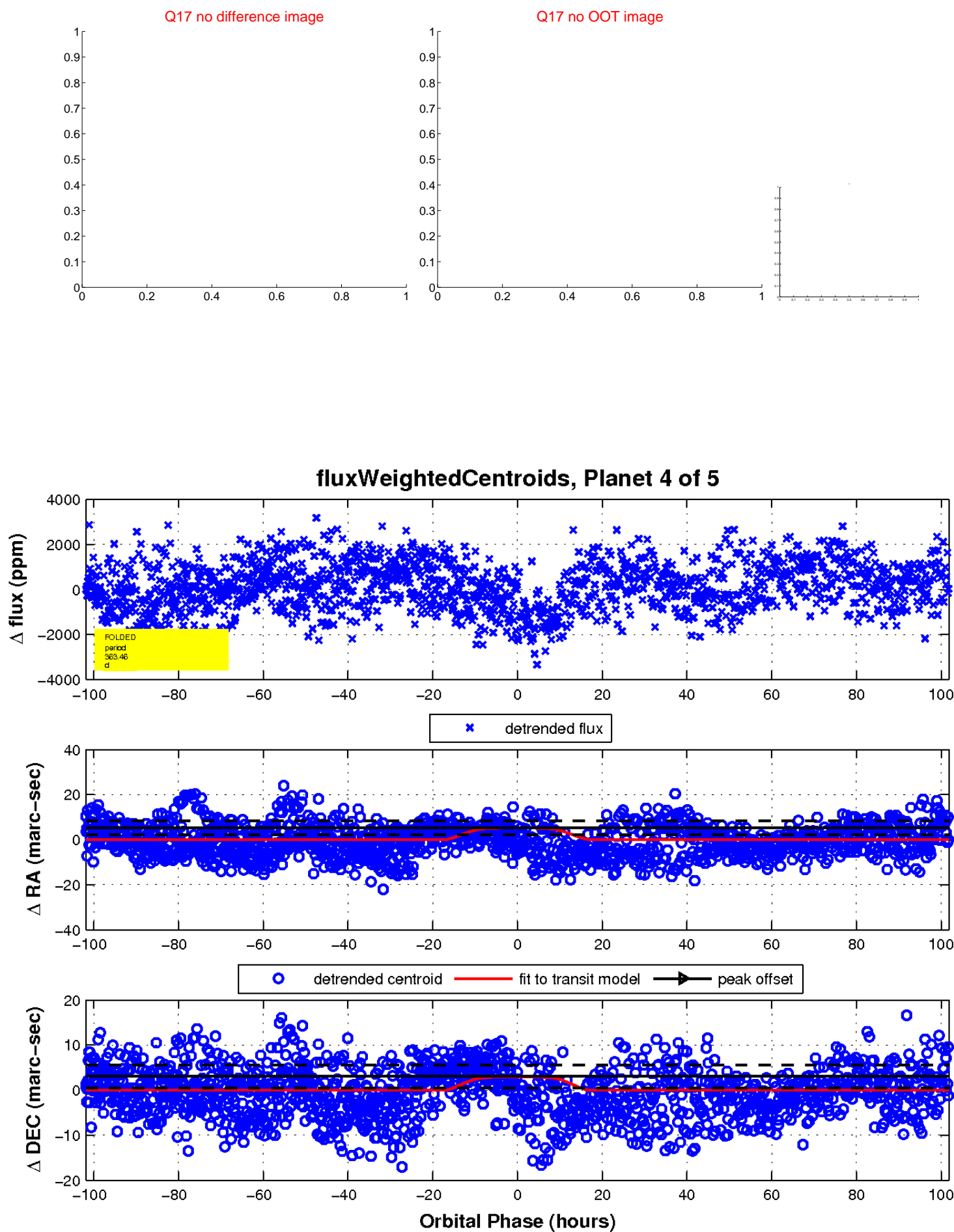
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



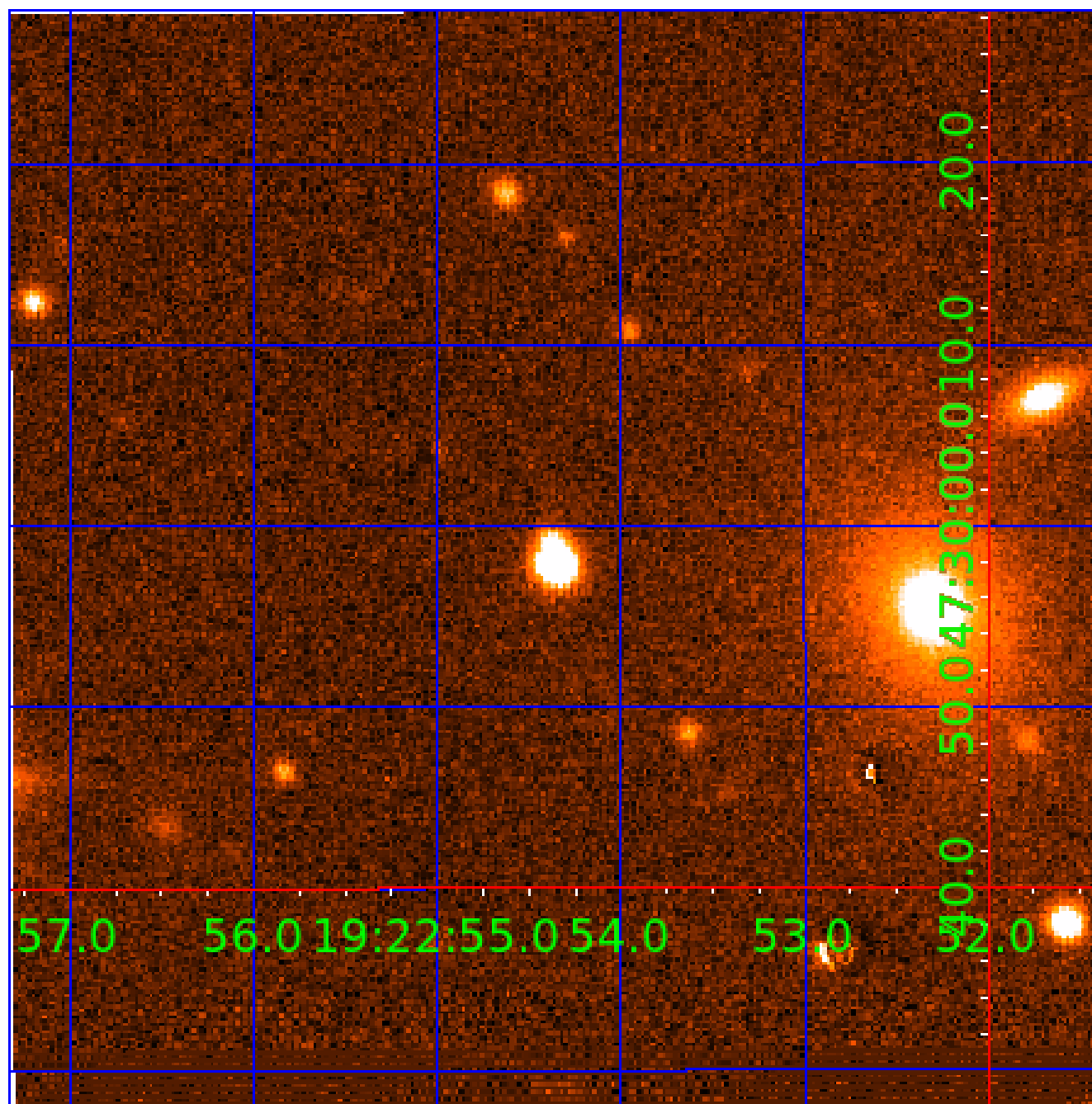
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 010336674

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010336674-01	OBS	No	378.381839	508.334001	1919.1	36.673	9.4	11.7	0.71	5426	3.81	0.44
010336674-03	OBS	No	368.061987	165.623924	1498.1	34.269	8.6	11.1	0.71	5426	2.71	0.46
010336674-04	OBS	No	363.460429	164.965697	1531.6	33.983	8.3	9.9	0.71	5426	3.41	0.46
010336674-05	OBS	No	373.853873	302.683613	2204.9	14.951	8.1	7.9	0.71	5426	6.33	0.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010336674-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—CENT_FEW_DIFFS
010336674-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
010336674-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
010336674-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

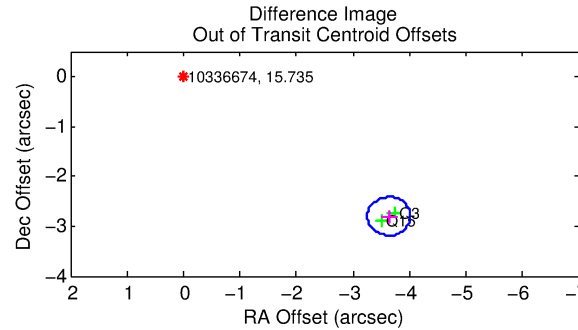
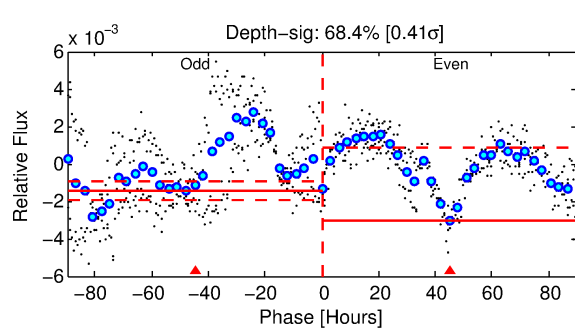
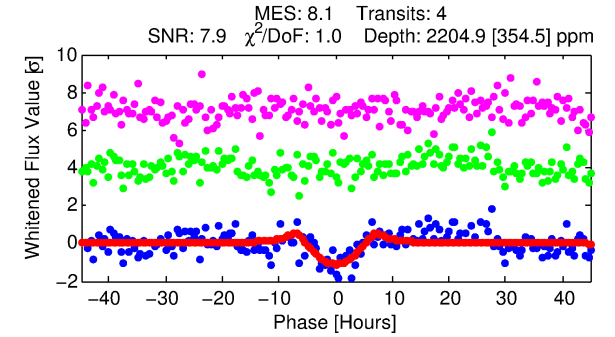
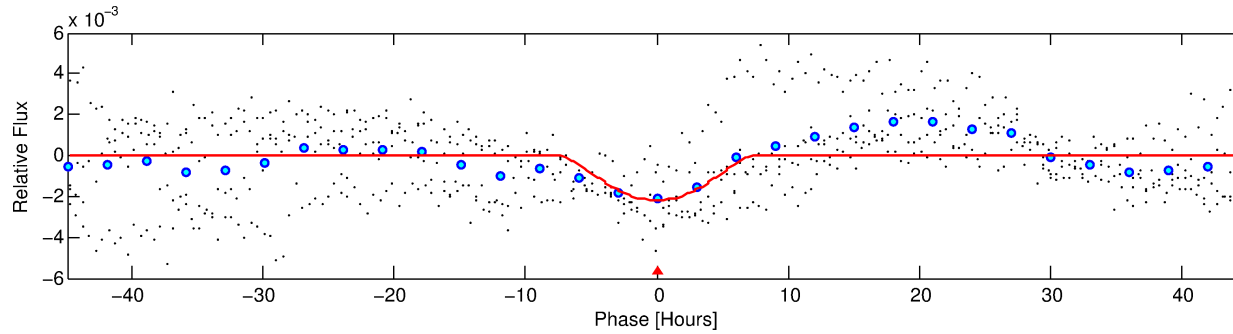
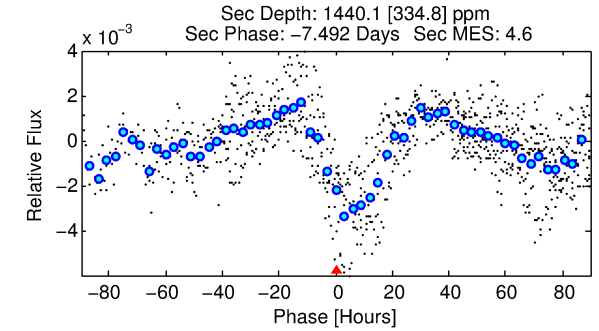
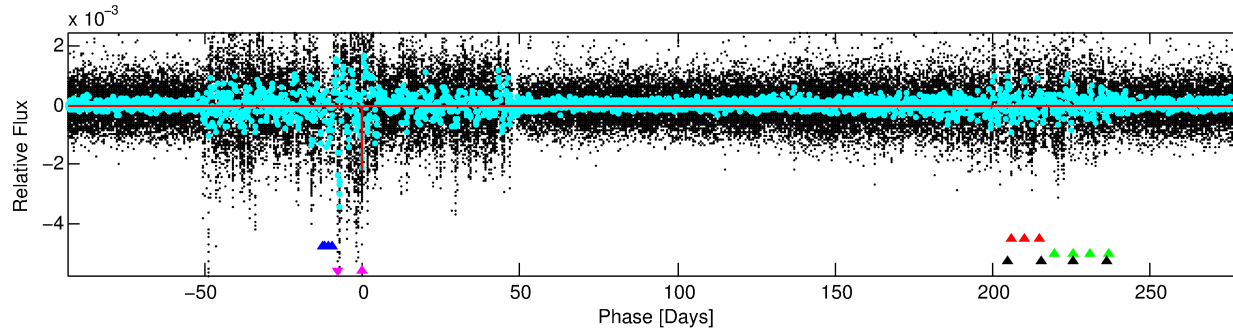
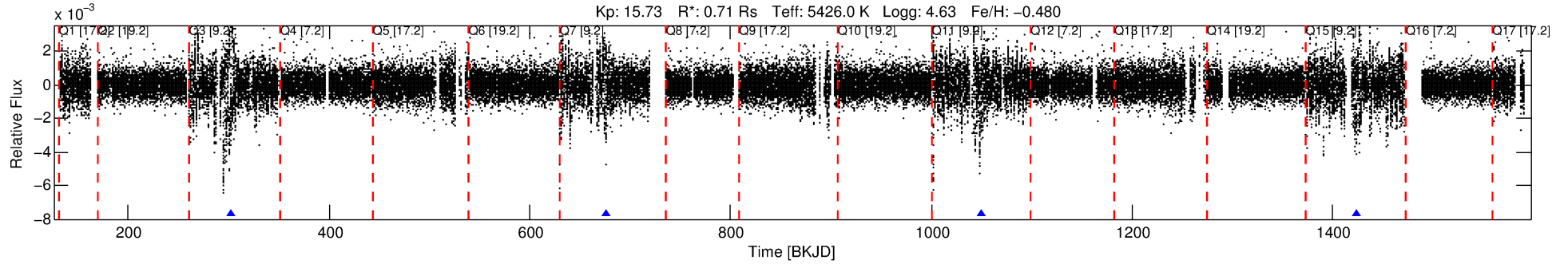
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010336674-05

No Significant Match Found

# DV One-Page Summary

KIC: 10336674 Candidate: 5 of 5 Period: 373.854 d



## DV Fit Results:

Period = 373.85387 [0.01525] d  
Epoch = 302.6836 [0.0284] BKJD  
Rp/R\* = 0.0820 [0.1986]  
a/R\* = 79.12 [40.32]  
b = 1.00 [0.28]  
Seff = 0.45 [0.10]  
Teq = 208 [11] K  
Rp = 6.33 [15.38] Re  
a = 0.9337 [0.1198] AU  
Ag = 17220.01 [83597.32] [0.21σ]  
Teff = 3692 [4479] K [0.78σ]

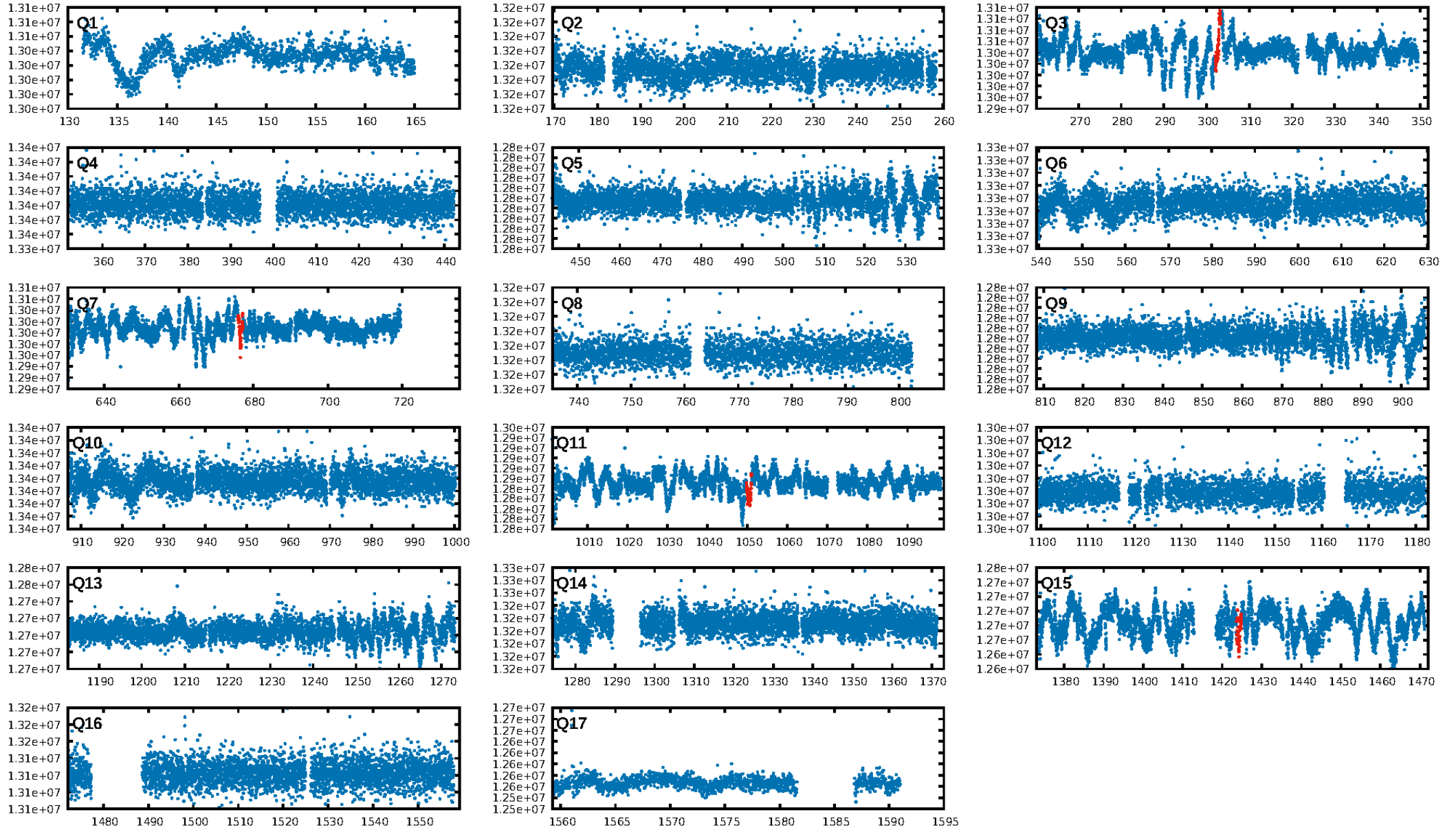
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [3.72σ]  
LongPeriod-sig: 59.3% [0.83σ]  
ModelChiSquare2-sig: 61.7%  
ModelChiSquareGoF-sig: 99.7%  
**Bootstrap-pfa: 8.95e-09**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 146  
Centroid-sig: 2.6%  
Centroid-so: 6.732 arcsec [2.35σ]  
**OotOffset-rm: 4.588 arcsec [35.78σ]**  
**KicOffset-rm: 4.519 arcsec [35.65σ]**  
OotOffset-st: 0/2/0/0 [2]  
KicOffset-st: 0/2/0/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [4/4]

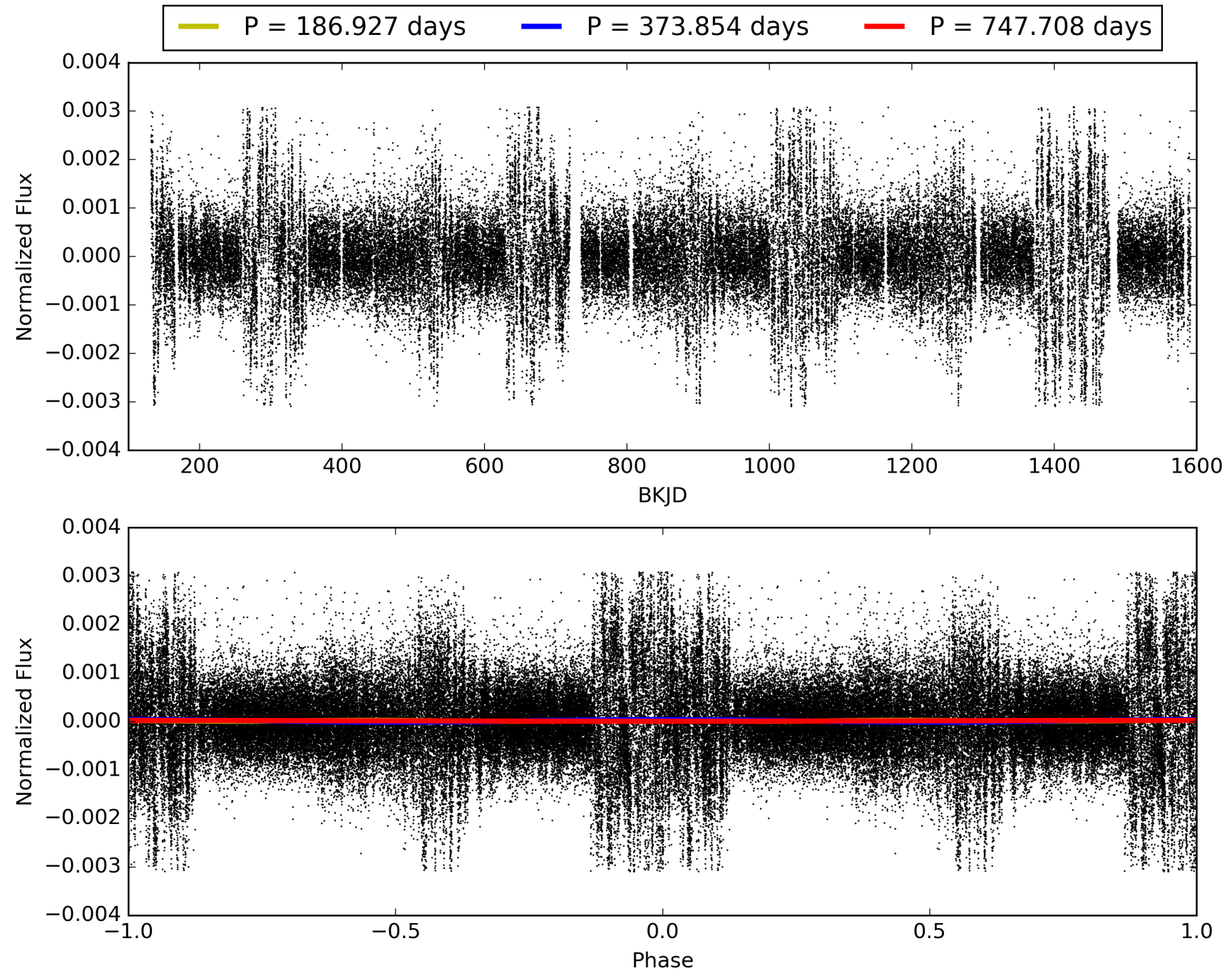
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:57:41 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010336674-05, PDC Light Curves

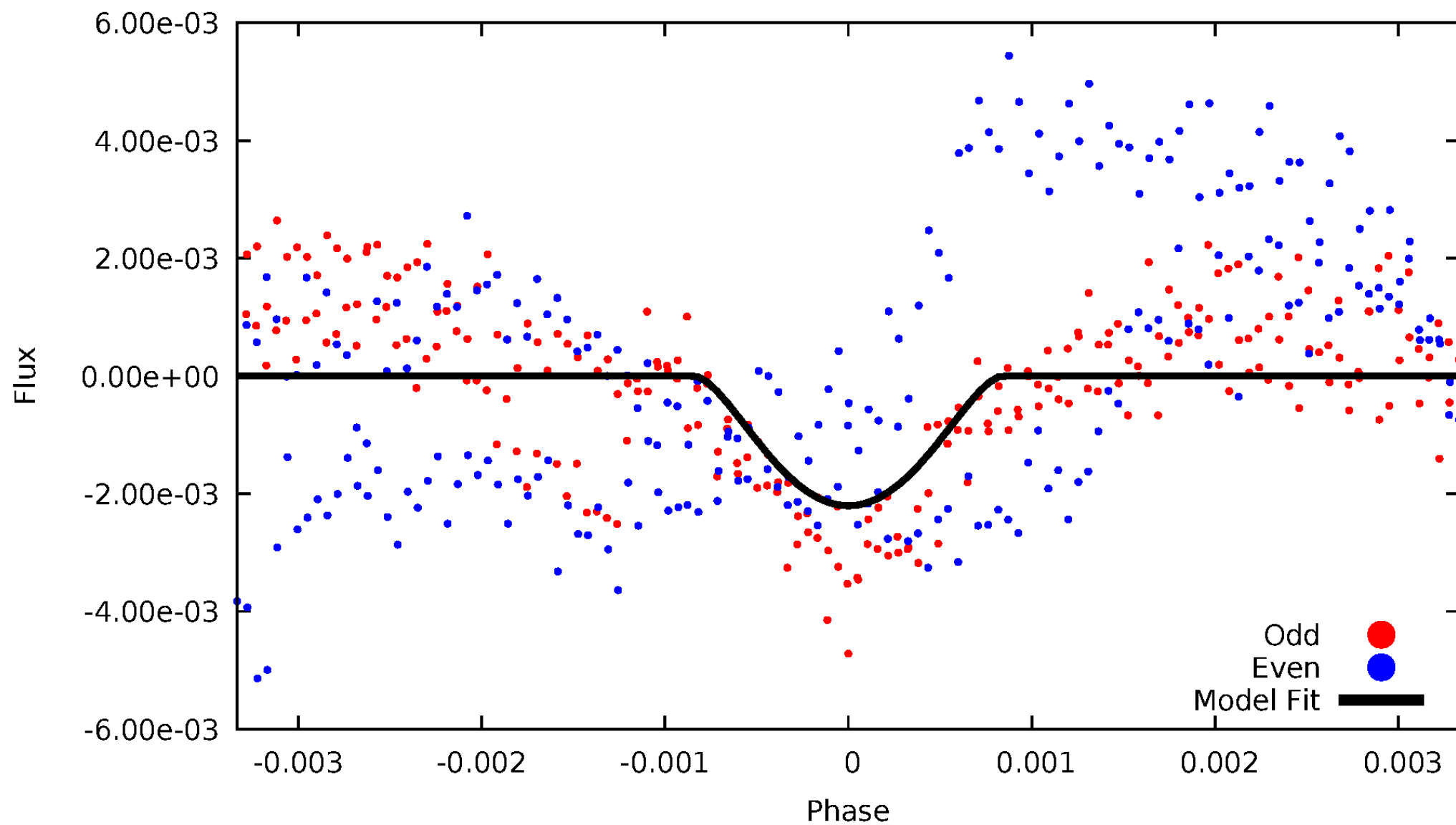


TCE 010336674-05



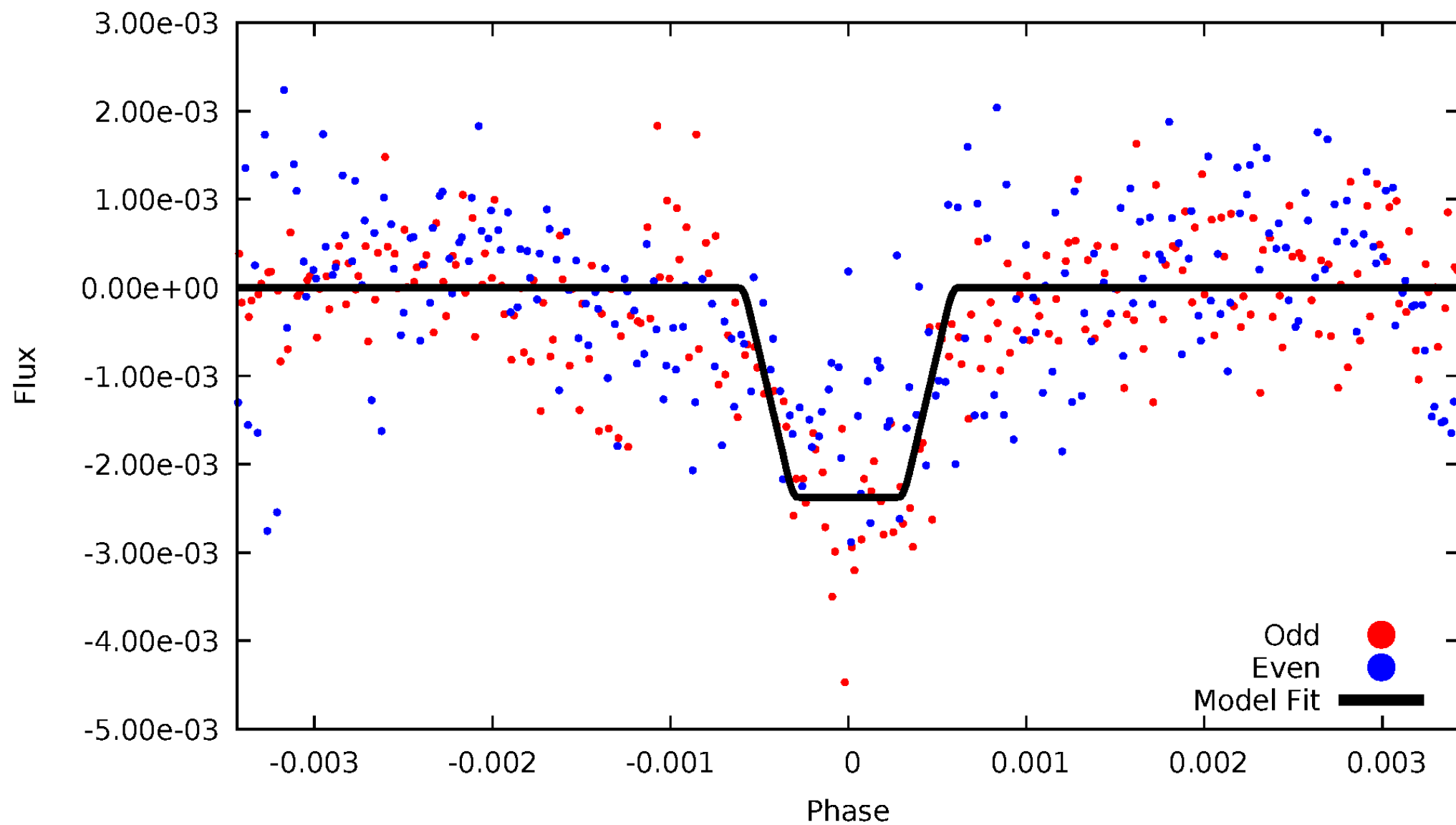
# DV Odd/Even

TCE 010336674-05



# ALT Odd/Even

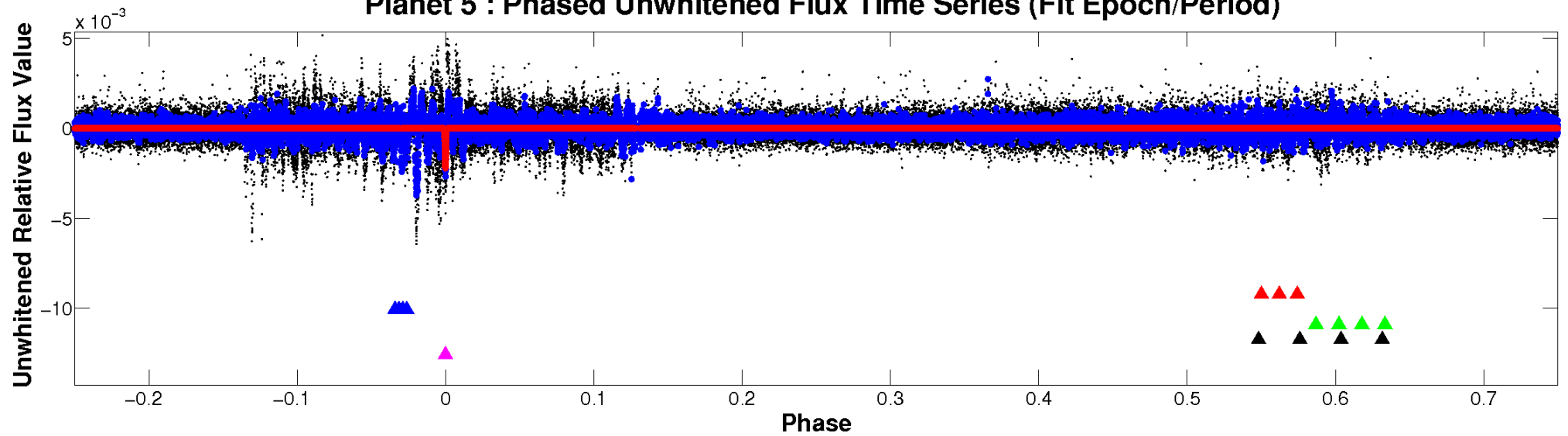
TCE 010336674-05



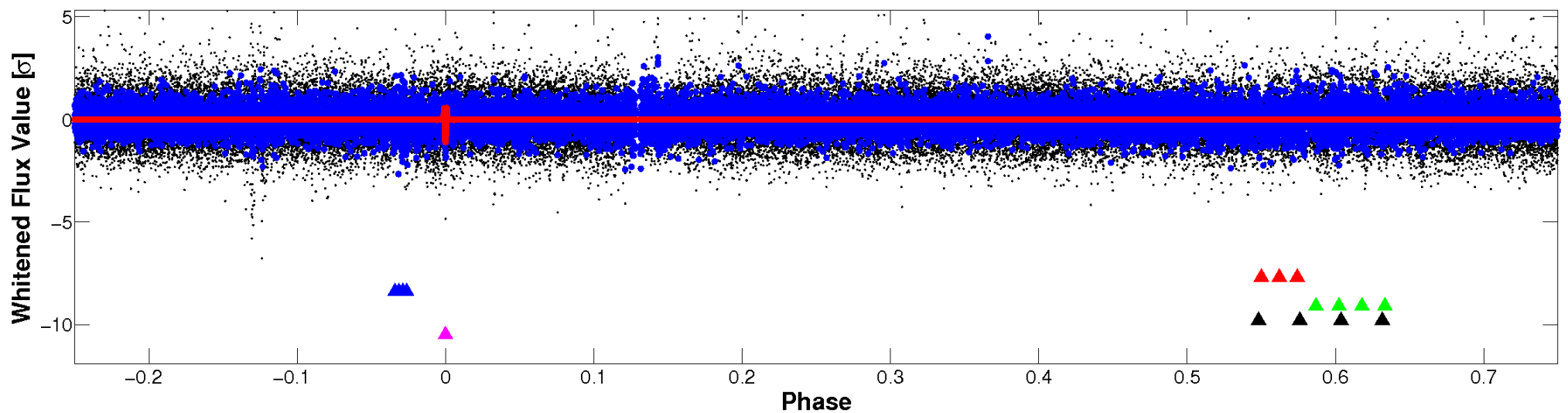


# Non-Whitened Vs. Whitened Light Curve

## Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



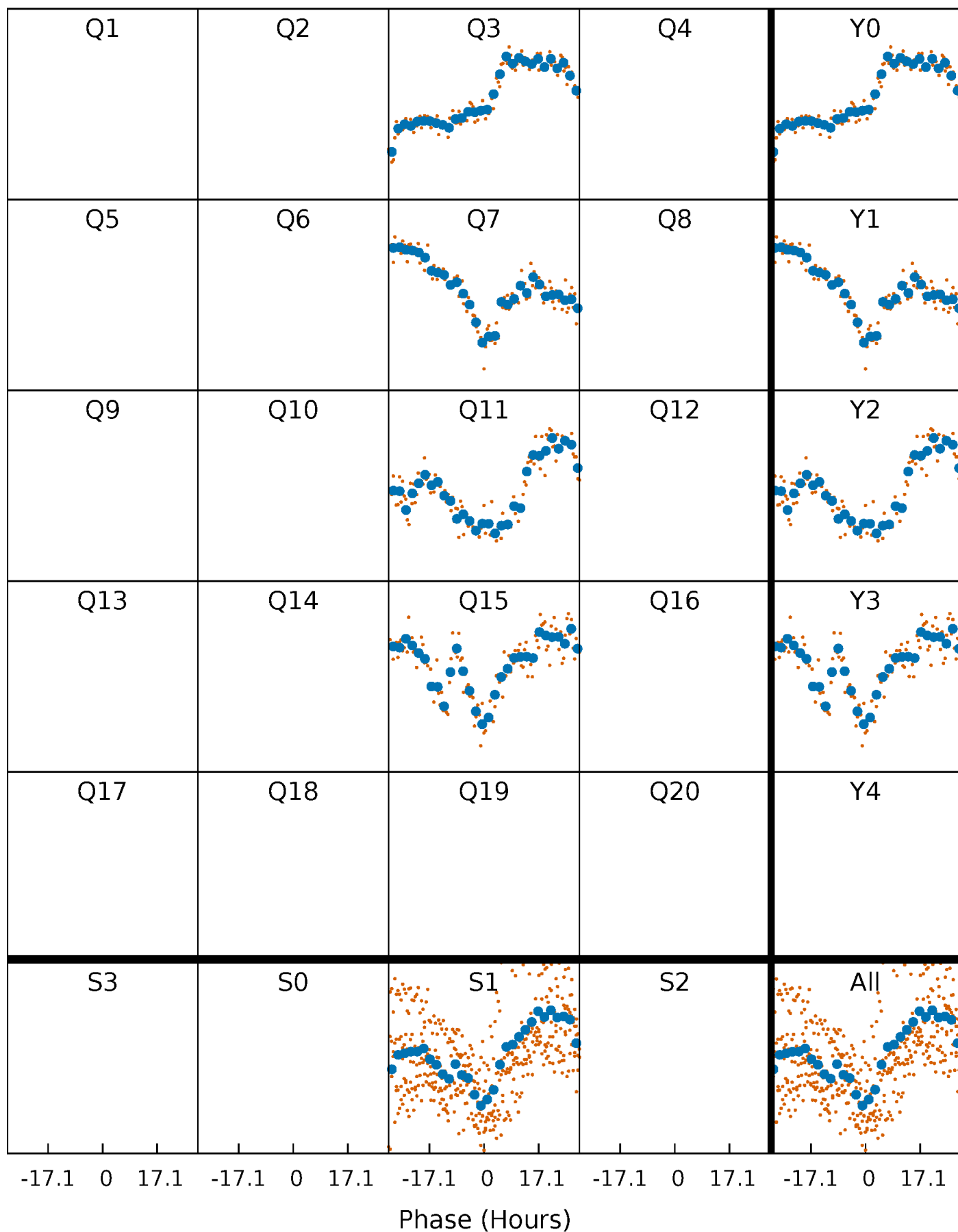
## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)





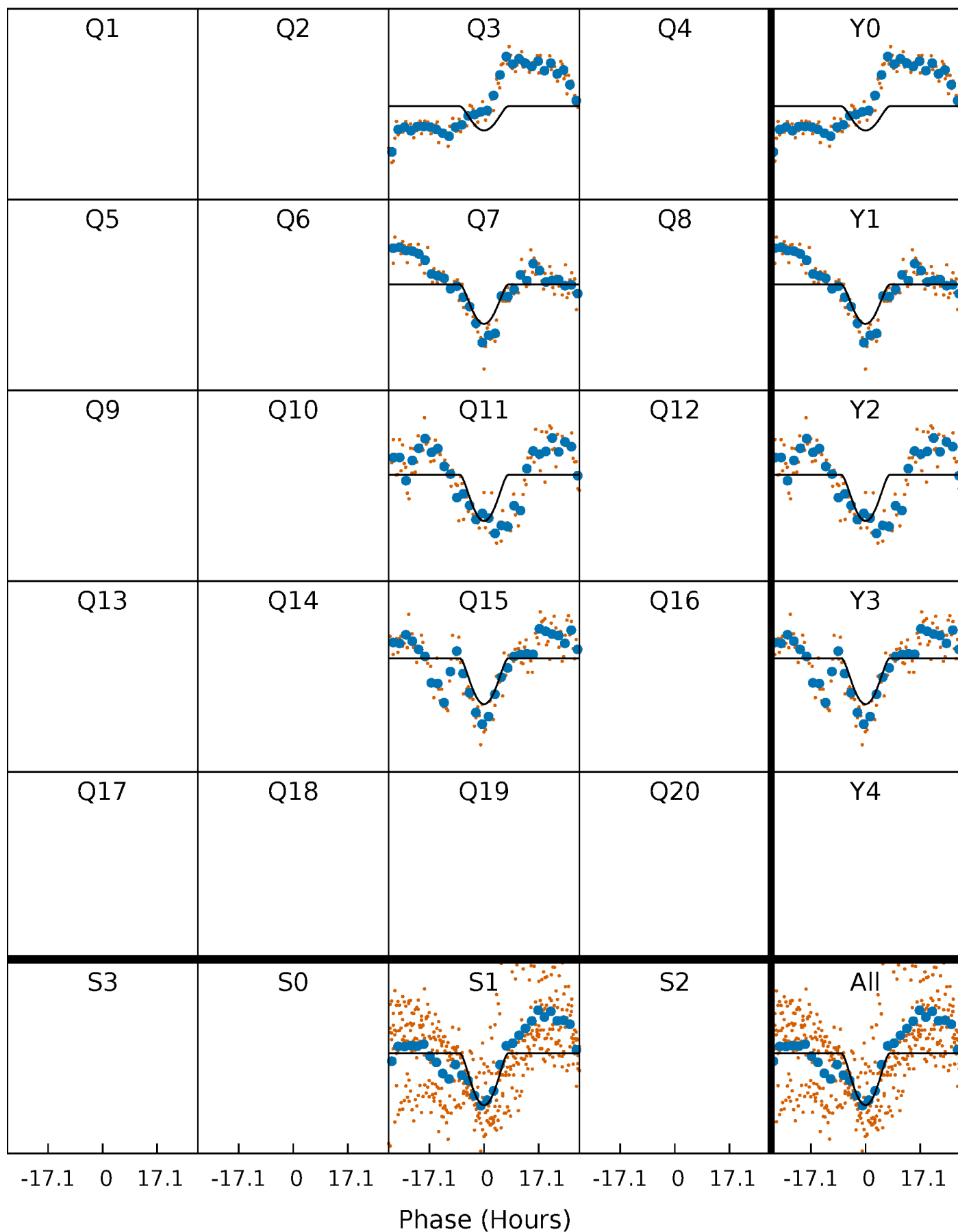
# PDC Quarter-Phased Transit Curves

TCE 010336674-05     $P=373.853873$  Days     $T_0=302.683613$  (BKJD)



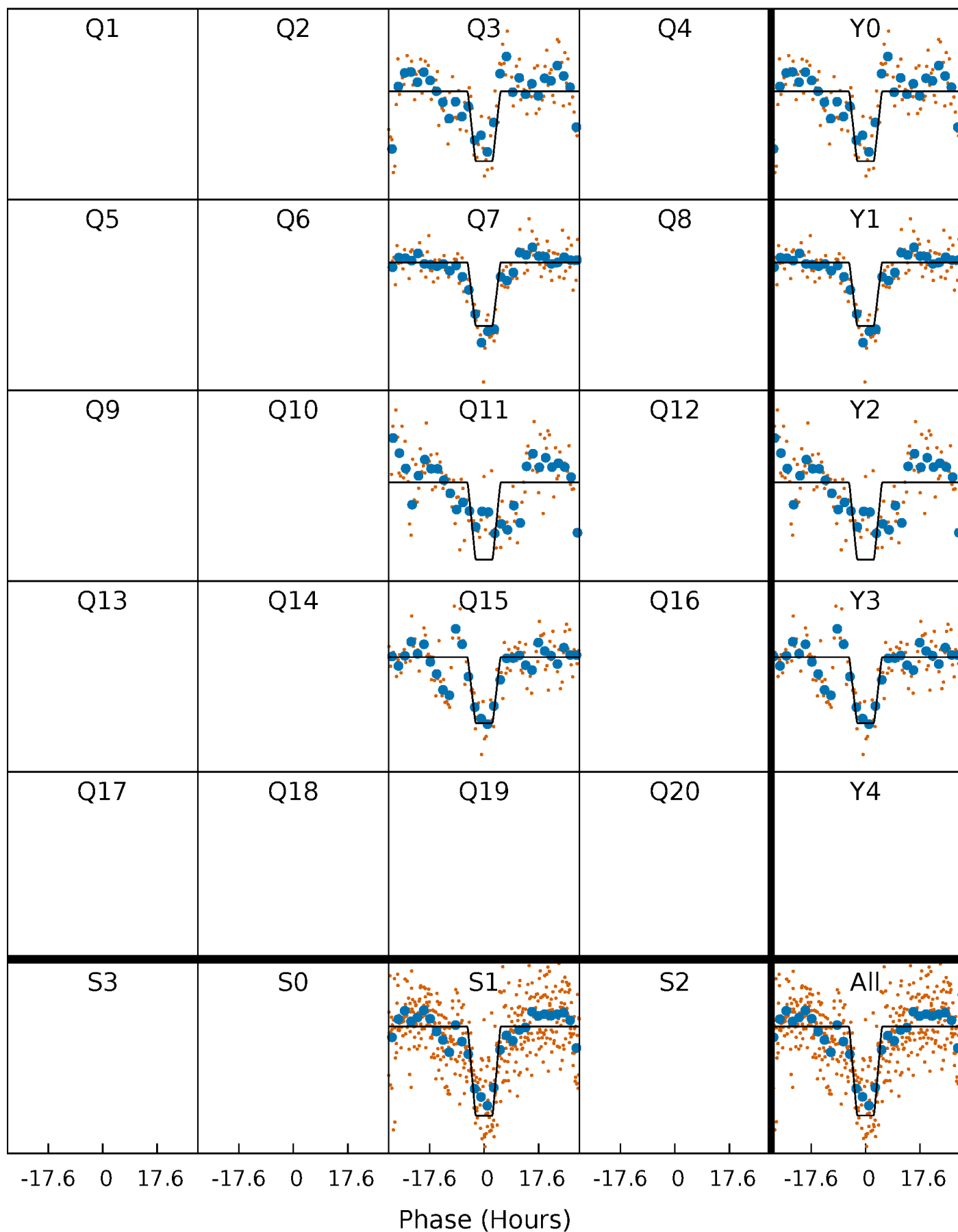
# DV Quarter-Phased Transit Curves

TCE 010336674-05     $P=373.853873$  Days     $T_0=302.683613$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

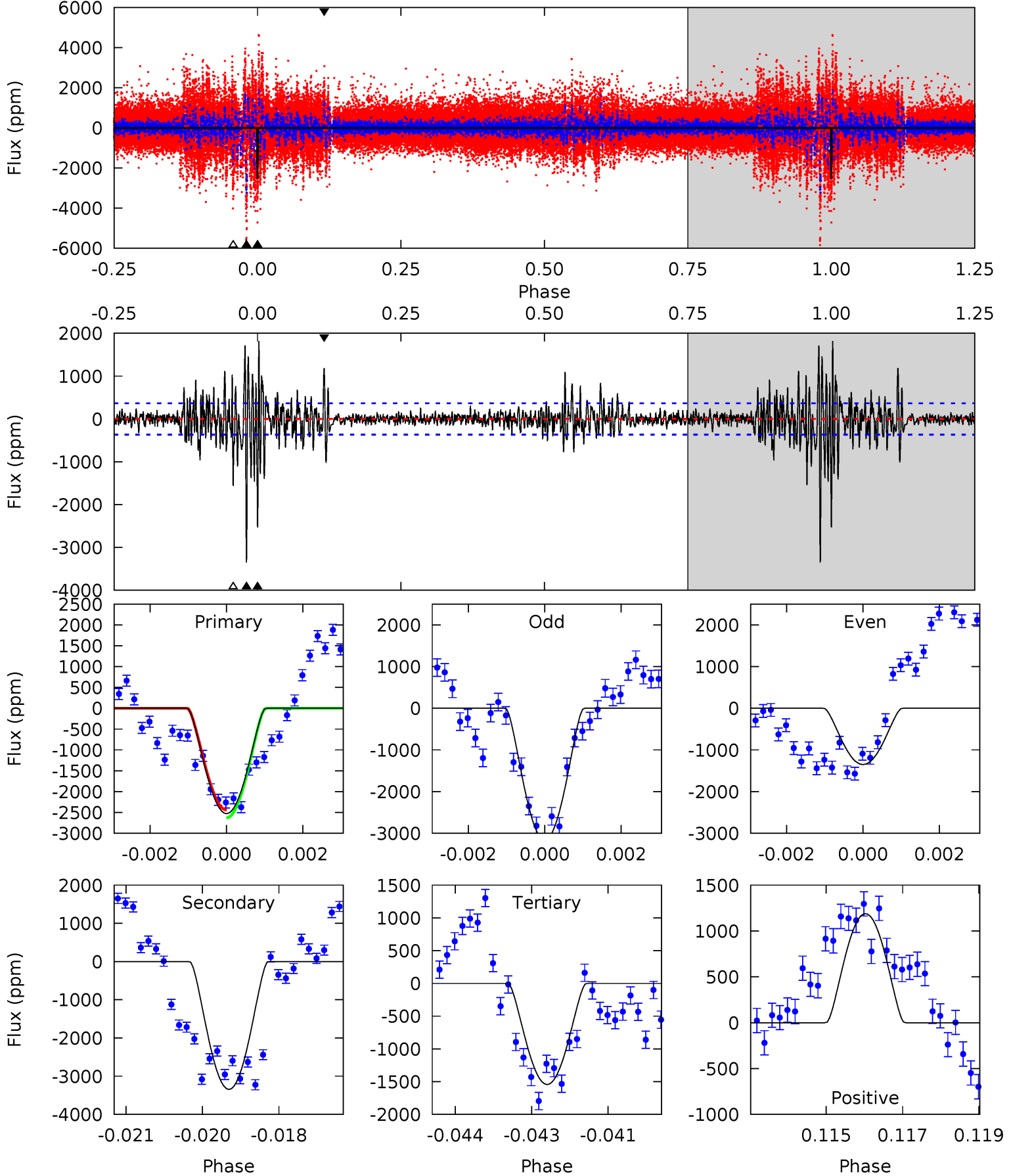
TCE 010336674-05     $P=373.845603$  Days     $T_0=302.699231$  (BKJD)



# DV Model-Shift Uniqueness Test

010336674-05, P = 373.853873 Days, E = 302.683613 Days

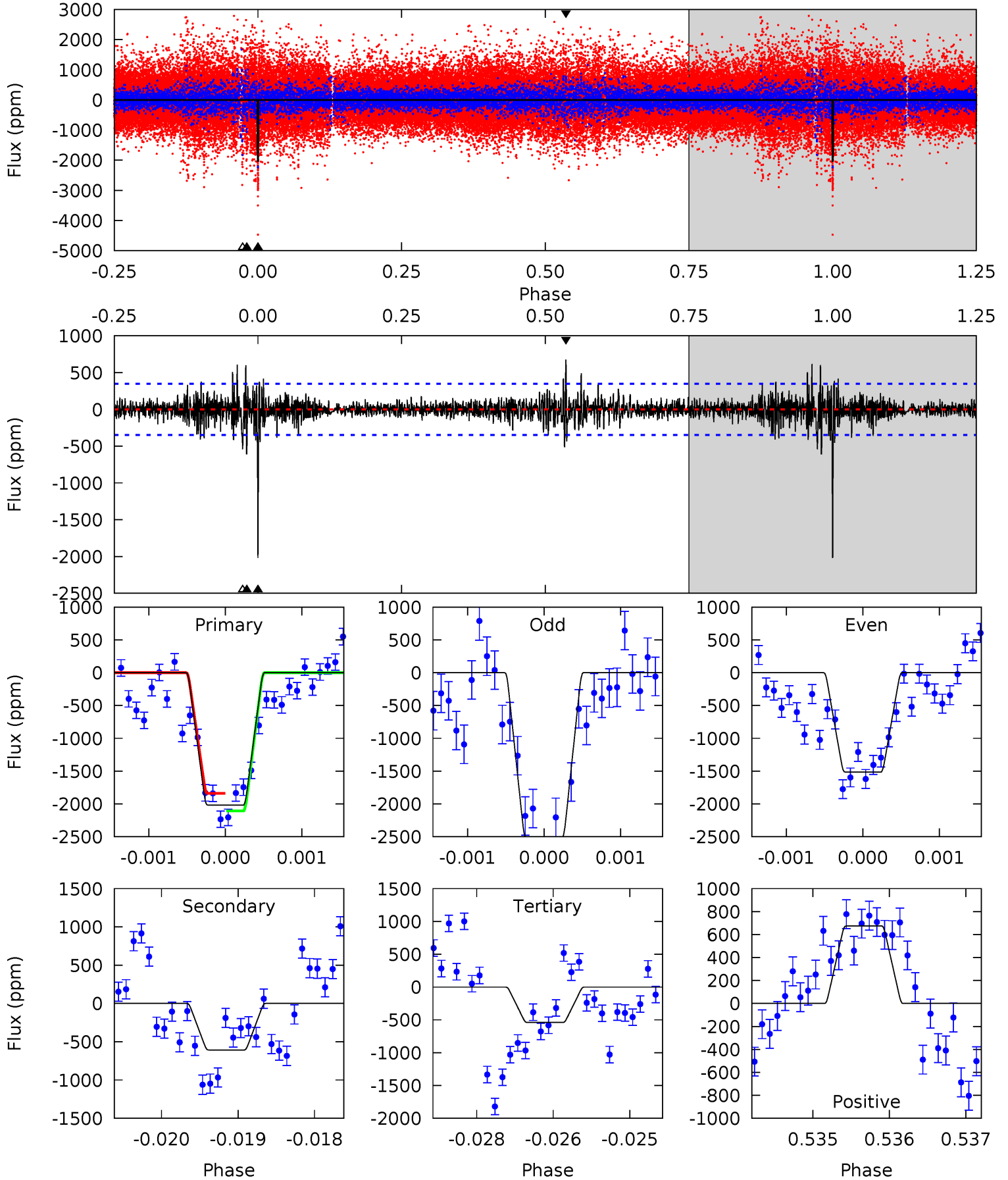
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.1	49.1	22.6	17.4	5.36	3.15	4.07	14.4	19.6	26.4	31.6	13.5	0.77	0.35	1.40



# Alt Model-Shift Uniqueness Test

010336674-05, P = 373.845603 Days, E = 302.699231 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.5	9.49	8.43	10.5	5.42	3.24	1.56	23.1	21.0	1.06	-1.04	7.78	0.98	0.25	2.06



### Stellar Parameters For KIC 010336674

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5426^{+162}_{-146}$	$4.628^{+0.032}_{-0.097}$	$-0.480^{+0.300}_{-0.300}$	$0.708^{+0.111}_{-0.051}$	$0.785^{+0.082}_{-0.075}$	$3.117^{+0.518}_{-0.998}$
	+3%/-3%	+1%/-2%	+62%/-62%	+16%/-7%	+10%/-10%	+17%/-32%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 010336674-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-3347 \pm 68$	$12.71^{+14.33}_{-8.06}$	$295^{+12}_{-11}$	$3676^{+1754}_{-741}$	$9836^{+66094}_{-7575}$
Alt.	$-608 \pm 64$	$12.15^{+12.21}_{-8.16}$	$296^{+12}_{-11}$	$2886^{+1210}_{-485}$	$1911^{+16716}_{-1437}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

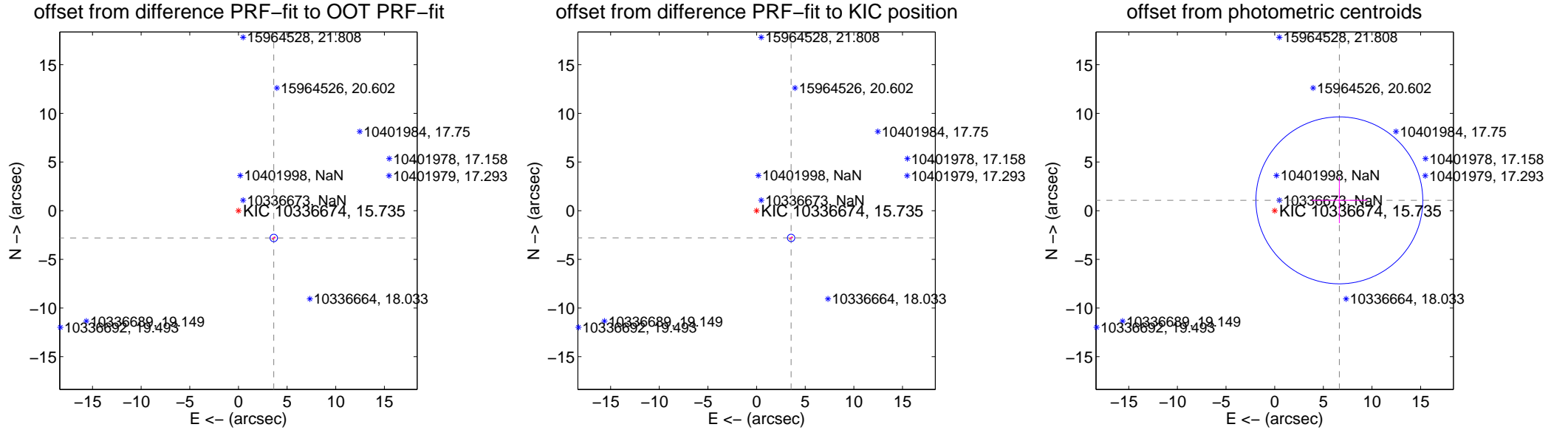
## DV Centroid Data

Supplemental centroid analysis for 010336674-05. Kepler magnitude: 15.73. Transit SNR 7.94

There are 0 quarters with good PRF difference image offsets

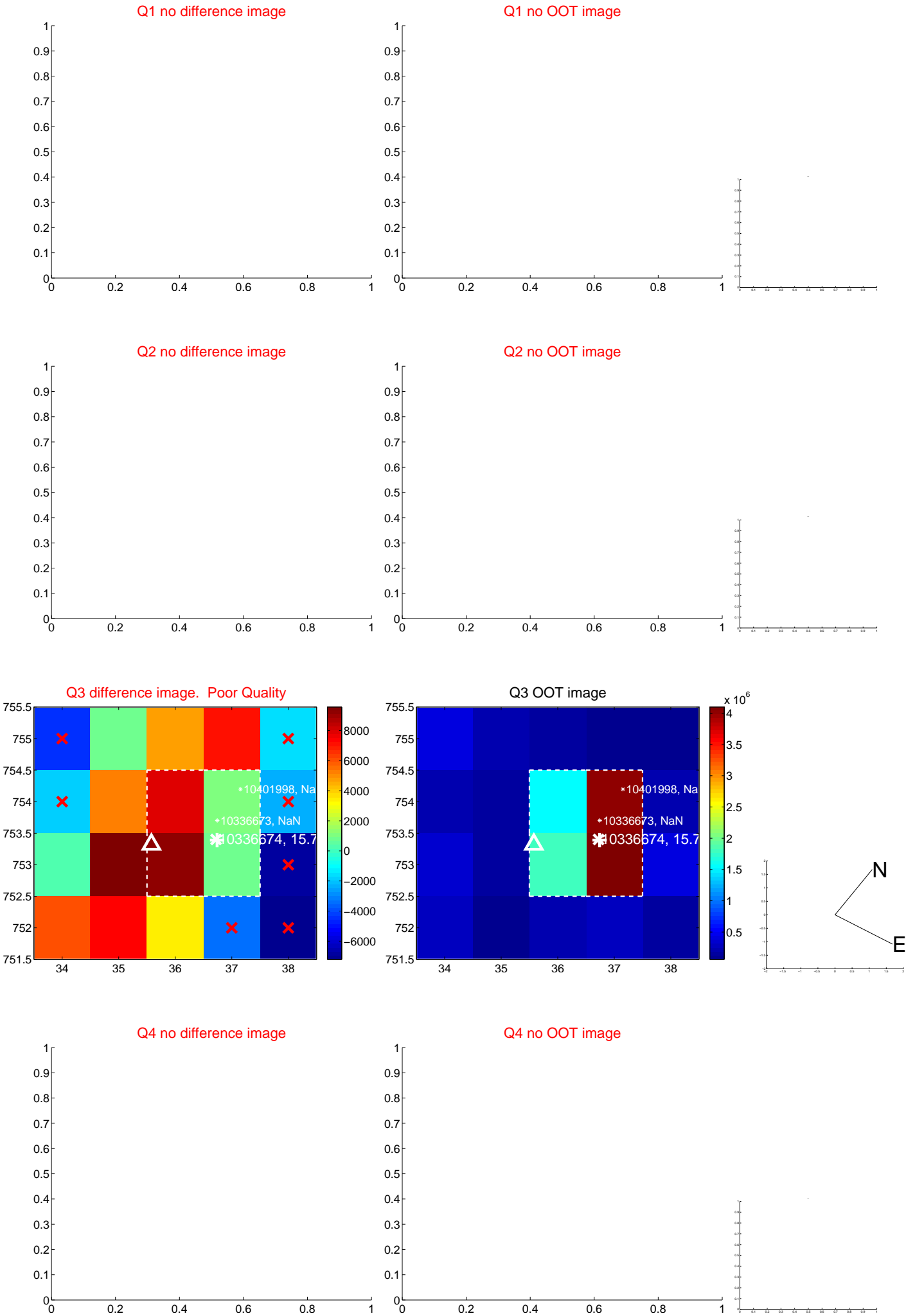
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.588 \pm 0.128$	35.78	$-3.632 \pm 0.137$	$-2.803 \pm 0.111$
PRF-fit source offset from KIC position	$4.519 \pm 0.127$	35.65	$-3.549 \pm 0.137$	$-2.797 \pm 0.108$
photometric centroid source offset	$6.73 \pm 2.86$	2.35	$-6.65 \pm 2.87$	$1.06 \pm 2.35$



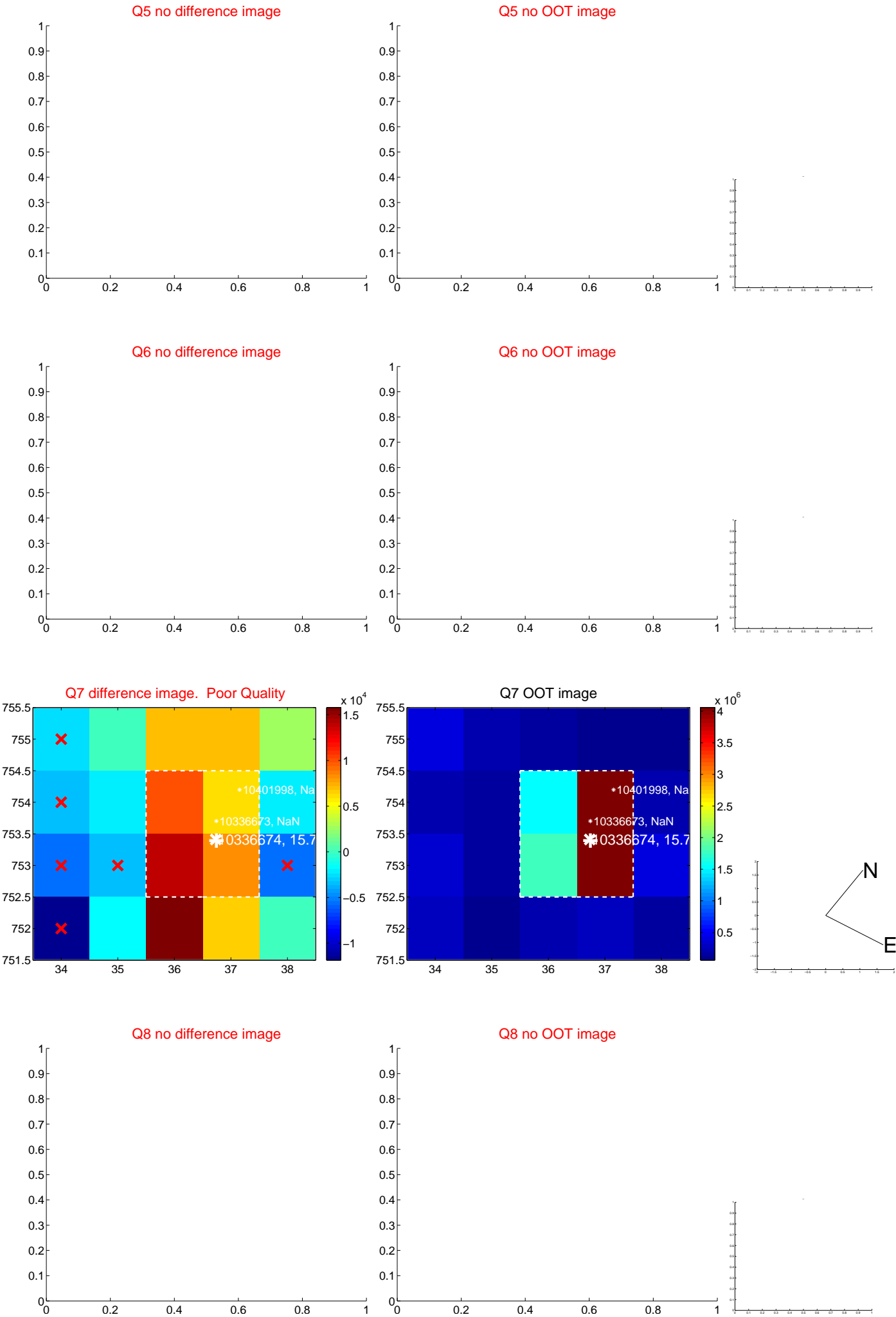
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

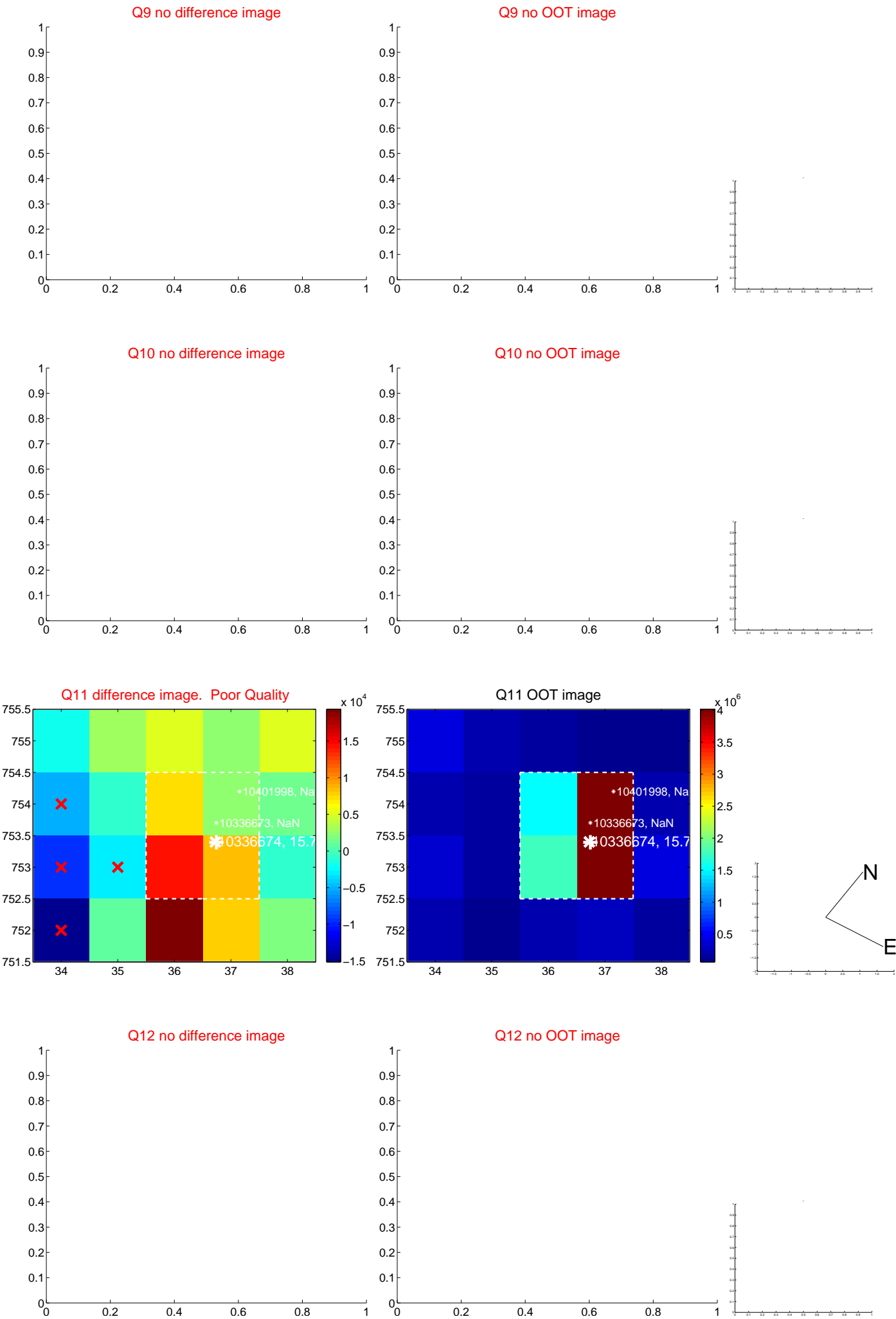




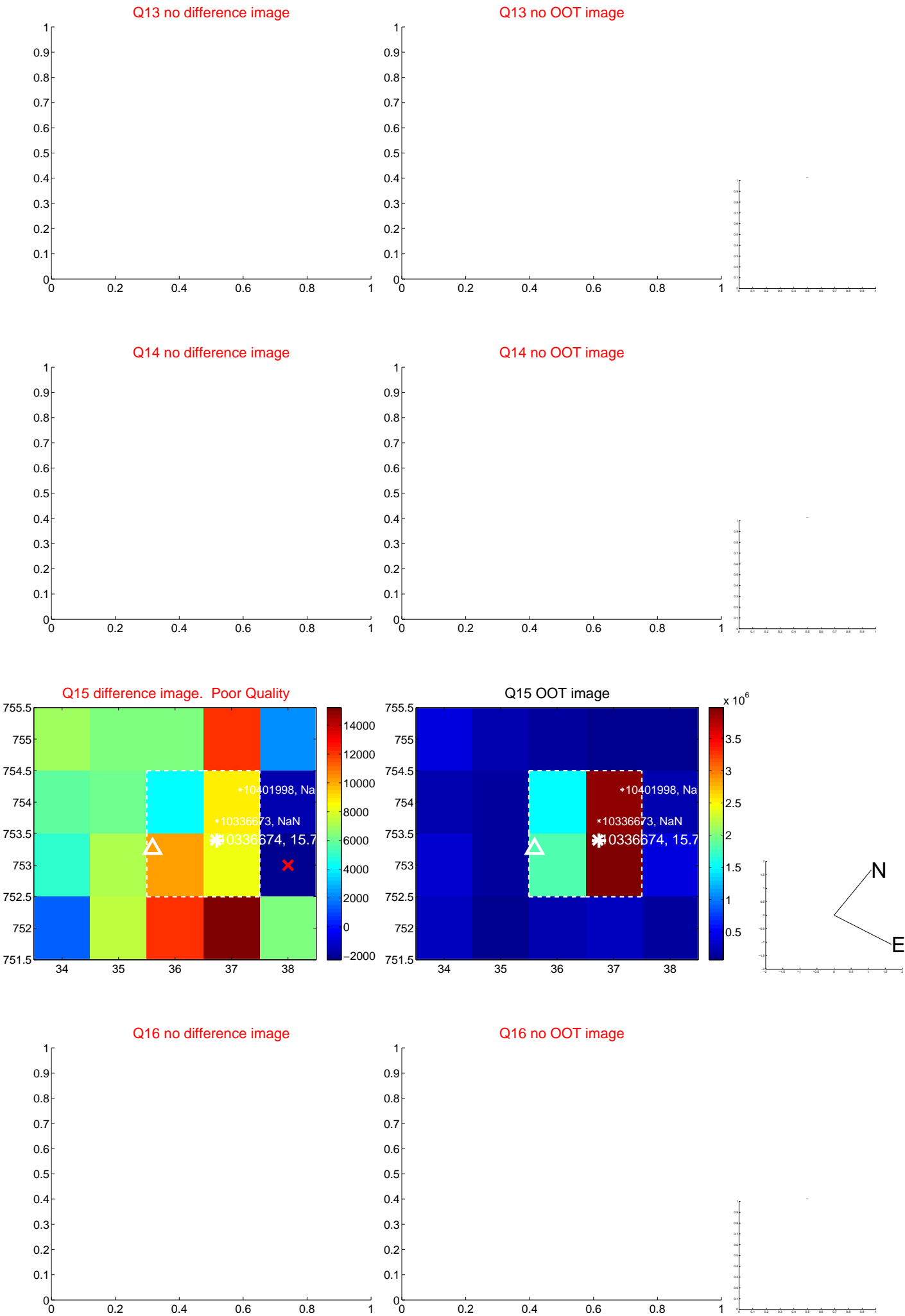
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



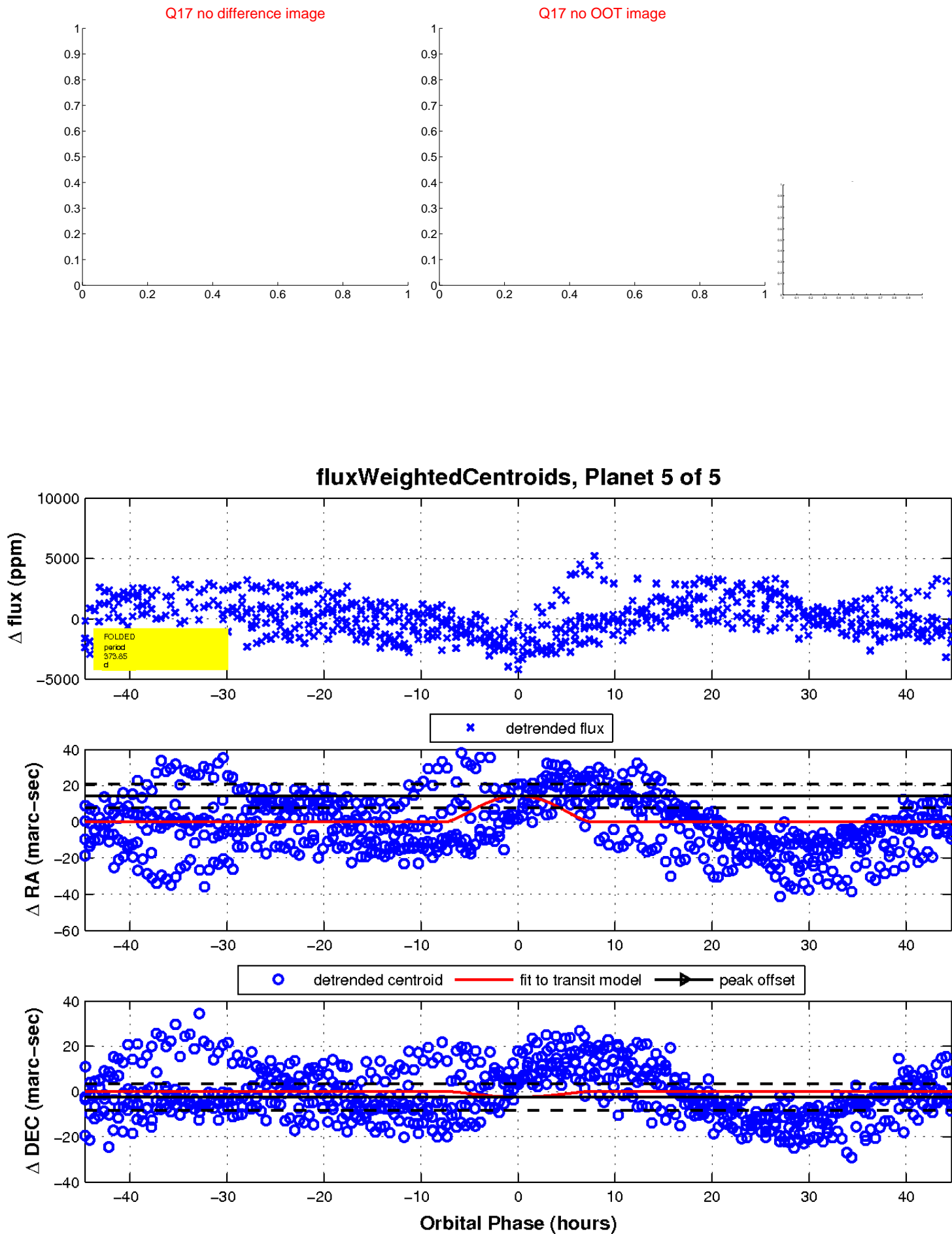
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

